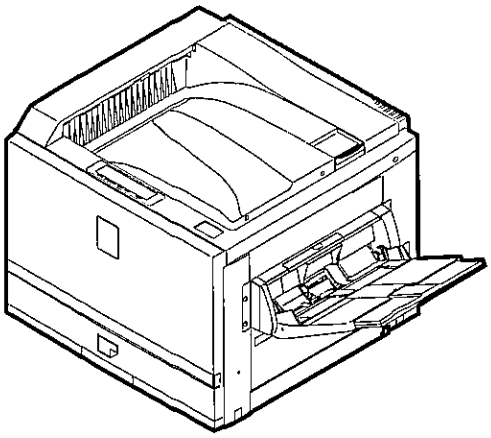
SHARP SERVICE MANUAL

CODE: 00ZARC260PA1E



DIGITAL FULL COLOR PRINTER

MODEL AR-C260P

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Parts marked with "⚠" are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

SHARP CORPORATION

This document has been published to be used for after sales service only.
The contents are subject to change without notice.

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[1] OUTLINE

1. Product features

No.	Feature	Content	Employed technology
1	Compact, lightweight, A3 tandem engine	670 x 595 x 480 mm (26.4 x 23.4 x 18.9 inch), about 61kg (about 134.5 lbs.)	Mono-component wax-free toner, LED printhead
	High speed output (Continuous print speed)	Color: 26PPM B/W: 32PPM (A4) / 32PPM (LT) (When center tray paper exit, offset function OFF)	
2	Manual paper feed capacity	300 sheets/64g (17 lbs.)	Development of a large capacity manual feed tray
	Heavy paper support	64 to 300g/m^2 (17 to 80 lbs.)	Oil-less fusing unit, paper feed/paper transport technology
	Heavy paper duplex feed support	64 to 200g/m^2 (17 to 53 lbs.)	
3	Improved user maintenance	Paper jam process: 2 positions of open/close (sides)	Paper jam control technology
		Toner supply: Cartridge replacement	Mono-component wax-free toner
4	Improved service maintenance	Developing section: Mono-component development eliminates the need for developer replacement.	Mono-component wax-free toner
		Drum section: Cartridge replacement	Designed for easy maintenance
		Fusing section: Simplified structure by wax-free. The unit can be disassembled simply by releasing the lock with the knob.	Mono-component wax-free toner. Designed for easy maintenance
		Transfer section: One-touch extraction. Designed for easy belt replacement.	Designed for easy maintenance
		Color resist automatic adjustment: Visual judgment by paper exit is automatically performed.	Process control technology, which allows user adjustment.

2. Newly employed technology

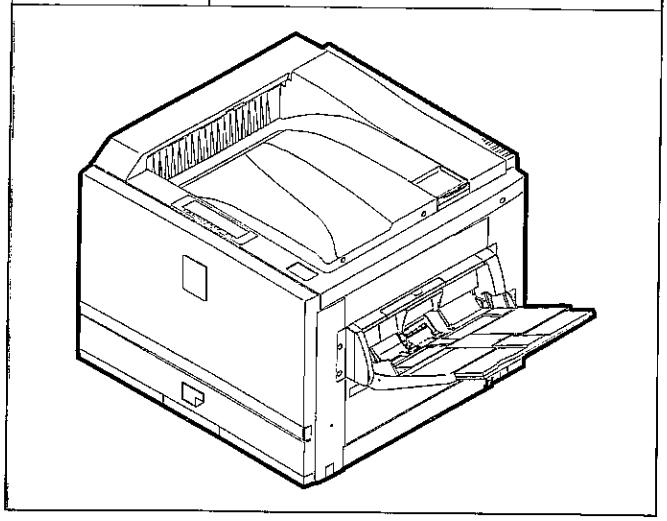
	Item	Content	Remark
1	LED printhead employed	• Employment of the 4bit LED provides 16-gradation expressions for each of YMCK. • Free from mechanical noises which are produced from the unit such as an LSU. Printing is started immediately without waiting for stabilization of the polygon motor speed. • Lower power consumption than an LSU	Resolution: 600dpi (Total dots: 7,424 dots)
2	Oil-less fusing system employed	• Development of a new wax-free toner • The wax-free fusing system provides a simplified structure and improved paper feed capability. • Notes and remarks can be put on a copy image similar to normal page.	

[2] CONFIGURATION

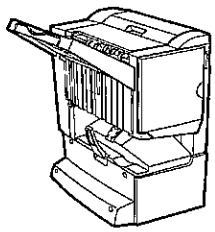
1. Product Line and options

A. Line of machine

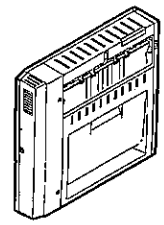
Model name	Composition
AR-C260P	Printer model



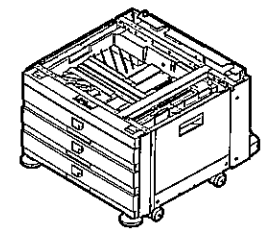
B. Line of options



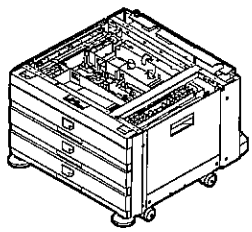
AR-F13/Saddle stitch finisher
(Requires Duplex pass + Reverse unit (AR-RB1).)



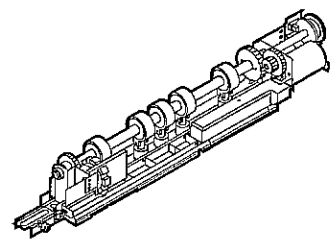
AR-RB1/Duplex pass + Reverse unit
(Requires Desk (AR-D19).)



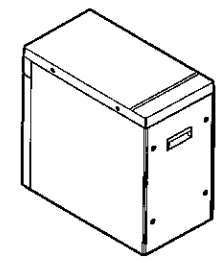
AR-D18/Paper feed module
(3-stage paper feed desk)
AR-D17/Paper feed module
(1-stage paper feed desk)



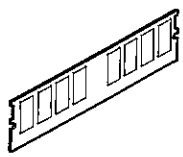
AR-D19/Duplex module + Paper feed module (2-stage) (Requires Duplex pass + Reverse unit (AR-RB1).)



AR-PN1A, AR-PN1B, AR-PN1C, AR-PN1D/
Punch unit
(for saddle stitch finisher (AR-F13))



AR-LC5N/Large capacity tray



128/256MB expansion memory
(Local arrangement)

C. Machine configuration list

STD or ○ (Yes) : Included in the set. (Included in the base engine.)
OP : Option
N/A or × (No) : No support or no setup

Basic composition	AR-C260P	Remark
Supply system	SRU	
AR drum cartridge × 4	○	
AR toner cartridge × 4	OP	
ICU memory	128MB	
JOB SHIFTER	○	

D. Combination of options list

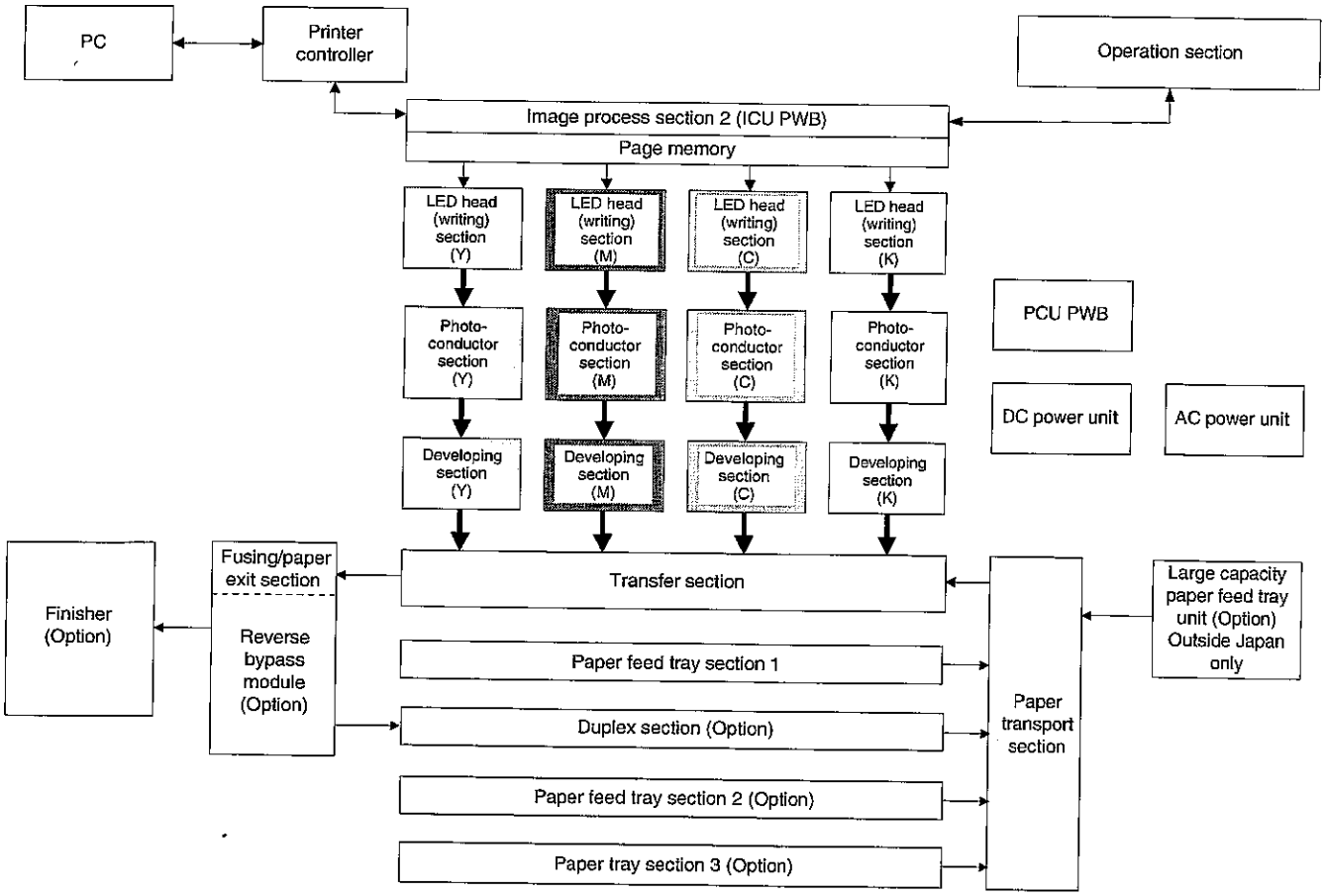
STD or ○ (Yes) : Included in the set. (Included in the base engine.)
OP : Option
N/A or × (No) : No support or no setup

Section	Item	AR-C260P	Remark
Paper feed system/ Duplex	One-stage tray (Standard provision of the machine)	STD	500 × 1 (80g/m^2)
	Manual paper feed tray (Standard provision of the machine)	STD	250 sheets (80g/m^2)
	1-stage paper feed desk (AR-D17)	OP	500 × 1 (80g/m^2)
	3-stage paper feed desk (AR-D18)	OP	500 × 3 (80g/m^2)
	2-stage duplex paper feed desk (AR-D19)	OP	Requires a bypass module with reverse function.
	Reverse bypass module (AR-RB1)	OP	Requires desk
	Large capacity tray (AR-LC5N)	OP	Requires desk
Paper exit system	Paper exit tray (AR-TE3)	OP	
	Job shifter	STD	Assembly
	Saddle finisher (AR-F13)	OP	Requires a bypass module with reverse function.
	Punch unit (AR-PN1A/PN1B/PN1C/PN1D)	OP	For saddle finisher
	Staple cartridge (AR-SC2)	OP	For saddle finisher
Electrical system (Printer controller)	Installed memory	128MB	For printer board
	PS3 expansion kit	OP	To be supported as OP at the running change.
	128MB expansion memory *1		Local arrangement
	256MB expansion memory *1		Local arrangement

*1: Expansion memory

Manufacture		Kingston Technology	Simple Technology	Viking Components	Memory Card Technology	I-O data device
DMM model number	Capacity (128MB)	KVR133X64C3/128	RB168S64/128A	VIK6642CL2	DM1665VS65804X-7G	LP-S100-128M
	Capacity (256MB)	KVR133X64C3/256	RB168S64/256A	VIK2642CL2	—	LP-S100-256M

2. Block diagram



[3] SPECIFICATIONS

1. Basic specifications

A. Base engine

(1) Type

Type	Desk-top

(2) Engine speed

Paper size	Color	B/W
	4bit mode (Image quality priority mode)	1bit mode only (Speed priority mode)
A4	26 ppm	32 ppm
8.5" x 11"	26 ppm	32 ppm
A5/8.5" x 5.5"	26 ppm	32 ppm
B5	26 ppm	32 ppm
B4/8.5" x 14"	15 ppm	17 ppm
A3/11" x 17"	13 ppm	15 ppm

(When continuous print, center tray paper exit, offset function OFF)

(3) Engine composition

Photoconductor kind	OPC (Drum diameter: ϕ30mm x 4)
Recording system	Electronic photo system (LED head system)
Developing system	Contact, non-magnetic 1-component development
Charging system	Saw teeth scorotron corona charging
Transfer system	Transfer belt structure direct transfer system
Cleaning system	Counter blade cleaning system
Fusing system	Pressure roller fusing system
Oil supply	Oil-less system
Waste toner process	Self collection of each toner cartridge Waste toner box collection for transfer belt
Shifter	Standard

(4) Shifter

Type	Shifter			
Paper weight	64 to 105g/m^2, 106 to 200g/m^2			
Paper size	Non offset mode (Simple load) 64 to 200g/m^2	A3W to A5, Postcard, 12" x 18" to 8.5" x 5.5"		
	Offset mode 64 to 200g/m^2	A3 to A5 11" x 17" to 8.5" x 5.5"		
Productivity	Non offset mode: Color 26 sheets, B/W 32 sheets (LT)/32 sheets (A4) Offset mode: Color/B/W 24 sheets			
Offset width	30mm			
Alignment		Extending	FR shift	Between jobs
	Non offset mode	Must not fall from the tray.	—	—
	Offset mode	Within 50mm	Within ± 10mm	1 – 150 sheets: 10mm or more 151 sheets or more: 5mm or more
	* When A4/Letter recommended paper is used.			

(5) Engine resolution

Resolution	Writing: 600dpi x 600dpi	
Smoothing	None	
Gradation	Color	Writing: 1 pixel 16 gradations for each color *
	B/W	Writing: 1 pixel 2 gradations (1bit) 16 gradations (4bit)

* Dither matrix allows printing in 1-pixel, 256-gradation (8bit).

(6) Warm-up

Warm-up time	99sec
Pre-heat function	Yes

(7) Jam recovery time

With the left cover open	About 60sec	60sec left standard condition
With the right and front covers open	About 8sec	

(8) Image chip (Printable area)

Full size	Total circumference 4mm ± 2mm Only when A3 full image is outputted, 6mm or less in total. OHP1 mode: 10mm or less at lead/rear edges

(9) Power source

Voltage	100V/120V/220V/240V
Frequency	50/60Hz
Power cord	Inlet type

(10) Power consumption

Max. power consumption	1500W
Low power mode	Less than 70W

(11) Noise/Ozone

Noise	Operating	64dB or less
	Stand-by	55dB or less
	Sleep	40dB or less
Ozone		0.02g/m^3 or less

(12) External dimensions

Printer (W x D x H)
670 x 595 x 480mm (26.4 x 23.4 x 18.9 inch)

(13) Weight

Toner cartridge	Printer
Not installed	About 57kg (About 126 lbs.)
Installed	About 64kg (About 141 lbs.)

(14) Machine occupying dimensions

Machine occupying dimensions (Machine only, with the trays full open)	994 x 595mm (39.1 x 23.4 inch)

B. Paper feed unit

(1) Machine paper feed tray

Paper feed system	1-stage tray
Paper feed size	AB series: A3, B4, A4, A4R, B5, B5R, A5, Special paper Inch series: 11" x 17", 8.5" x 14", 8.5" x 13", 8.5" x 11", 8.5" x 11"R, 8.5" x 5.5", A4, EXTRA
Paper feed capacity	550 sheets (64g/m^2 (17 lbs.) paper) 500 sheets (80g/m^2 (21 lbs.) paper, recommended paper for color)
Weight of paper suitable for paper feed	64 to 105g/m^2 (17 to 28 lbs)

Paper kind	Normal paper (including recommended paper for color), recycled paper, printed paper, punched paper, color paper, letter head
Paper size detection	Slide lever detection
Paper size selection	Use selection (Special paper size is inputted from the operation panel.)
Remaining quantity detection	Yes (0, 25%, 50%, 75%, Full, 5 steps)
Initial size when shipping	A3 (11" x 17")
Tray attach/detach	Possible
Universal support	Universal tray (free size)

(2) Manual feed tray (Bypass tray)

Transport reference	Center reference
Paper feed capacity	250 sheets (80g/m^2), 300 sheets (64g/m^2), 100 sheets (Postcard)
Paper size	A3W to A6R (Postcard)
Paper weight	64 to 300g/m^2 / 17 to 80lbs specified paper for color
Paper kind	Normal paper (including recommended paper for color), OHP1, OHP2. heavy paper 1 (106 to 200g/m^2 (28 to 53 lbs.)), heavy paper 2 (201 to 300g/m^2 (54 to 80 lbs.)), envelope
Paper size detection	Inch series: 12" x 18", 11" x 17", 8.5" x 14", 8.5" x 11", 8.5" x 11"R, 7.25" x 10.5"R, 8.5" x 5.5", A3, B4, A4, B5, A6R AB series: A3W, A3, B4, A4, A4R, B5, A5, A6R, 11" x 17", 8.5" x 14", 8.5" x 11", 7.25" x 10.5"R
Manual feed size setup	Yes (Ignoring automatic setup) Selected with key operation.

Detection of 8.5 x 14 can be changed to detection of 8.5 x 13 (216 x 330) with the simulation.

C. Paper exit unit

(1) Face down paper exit tray (Top section)

Paper exit position/system	Machine top face down paper exit
Paper exit capacity	500 sheets (A4/LT recommended paper for color)
Paper size	A6R (Postcard), 8.5 x 5.5 to A3W
Paper weight	64 to 200g/m^2 (17 to 53 lbs.)
Paper kind	Normal paper (including recommended paper for color), heavy paper 1 (106 to 200g/m^2 (28 to 53 lbs.))
Remaining quantity detection	No
Discharged paper full detection	Yes

(2) Face up paper exit tray (sides)

Paper exit position/system	Machine side face up paper exit
Paper exit capacity	250 sheets (A4/LT recommended paper for color)
Paper size	All sizes which are fed
Paper weight	64 to 300g/m^2 (17 to 80 lbs.)
Paper kind	All sizes which are fed (except for OHP sheets)
Remaining quantity detection	No
Discharged paper full detection	Yes

(3) Face down paper exit tray (side) (With the reverse unit installed)

Paper exit position/system	Machine side face down paper exit
Paper exit capacity	250 sheets (A4/LT recommended paper for color)
Paper size	AB series: A3W, A3, B4, A4, A4R, B5, B5R, A5 Inch series: 12" x 18", 11" x 17", 8.5" x 14", 8.5" x 11", 8.5" x 11"R, 7.25" x 10.5"R, 8.5" x 5.5", A3, B4, A4, B5
Paper weight	64 to 200g/m^2 (17 to 53 lbs.)
Paper kind	Normal paper (including recommended paper for color)
Remaining quantity detection	No
Discharged paper full detection	Yes

(4) Face up paper exit tray (side) (With the reverse unit installed)

Paper exit position/system	Machine side face up paper exit
Paper exit capacity	250 sheets (A4/LT recommended paper for color)
Paper size	A3W to A5R (Postcard)
Paper weight	64 to 300g/m^2 (17 to 80 lbs.)
Paper kind	Normal paper (including recommended paper for color), OHP, heavy paper (106 to 300g/m^2 (28 to 80 lbs.)), all other paper which is supported by the machine.
Remaining quantity detection	No
Discharged paper full detection	Yes

2. Operating conditions

(1) Platform

IBM PC/AT (Include compatible machine)

(2) Support OS

PCL	Windows 95/98/Me
	Windows NT4.0 / Windows 2000 / Windows XP (Whistler)
WHQL	Printer driver certification

(3) Support PDL

PDL	PCL5e

(4) Print channel

Support channel	IEEE1284 parallel port (ECP compatible) PSERVER/RPRINT NETWARE LPR/LPD FTP Net BEUI IPP (Ver.1.0) USB (1 port)
IEEE parallel port	Print data received through IEEE1284 parallel port Nibble mode (PnP support), ECPcompatible
PSERVER/ RPRINT NETWARE	PSERVER/RPRINT mode can be used under the Net Ware environment.
LPR/LPD	UNIX LPR/LPD command compatible
IPP	IPP Ver.1.0 compatible
FTP	The function to print data received through the built-in FTP server must be provided.
Net BEUI	Microsoft NetBEUI compatible
USB	USB1.1 support PnP support
IEEE1394	N/A
Blue Tooth	N/A

(5) Network management functions

SNMP	Supports Host Resource MIB v2, Finisher MIB/ Printer MIB, and SHARP Corporate MIB.
ARP/RARP/ BOOTP/DHCP	Allows IP address assignment by ARP/RARP/ BOOTP/DCHP.
Novell Pconsole	Supports device monitoring by Novell Pconsole NW-Admin. Requires installation of a print server card.
Novell NLSP	Supports IPC address assignment conforming to NLSP. Requires installation of a print server card.
Web remote setup	By use of the network interface, E-mail setup, telephone directory setup, and network setup can be adjusted.
E-mail Alert/ Status	Valid only when NIC is installed. Realizes information in the machine as one-direction mail transmission function using SMTP protocol.
E-mail Diagnosis	The detailed information of machine is attached to E-mail Status/Alert. Standard function of the controller (with NIC).
NJR v2 (Notify Job Result)	Sends job complete or error status. Must conform to Sharp status monitor.

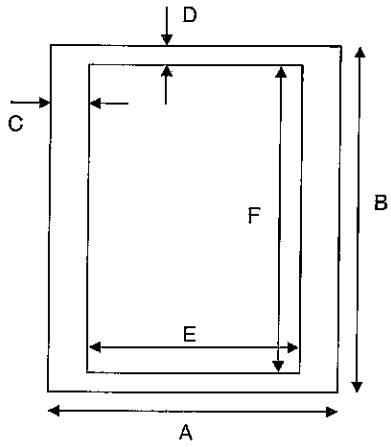
3. Hardware specification

Item	Specification
CPU	• Motorola MPC7410-500MHz • Input Clock: 66MHz from MPC107 • 60x Bus (64bit Bus Width) • Big Endian • 32KB I Cache & 32KB D Cache • Package: 25mm x 25mm 360pin CBGA
System Controller	• Motorola MPC107-66MHz • Input Clock: 16.345MHz from XTAL • 60x Bus (64bit Bus Width) support • Memory Control (SDRAM, Flash ROM) • PCI Bus Rev. 2.1 Host Bridge Controller (33/ 66MHz 32bit) • PCI Bus Arbiter (Up to 5 masters) • Clock Generator • I2C Control • 2 channels DMA support • Interrupt Control • Package: 33mm x 33mm 503pin PBGA
Video Controller ASIC	• Destiny D8501A • Input Clock: 66MHz from MPC107 • 60x Bus (64bit Bus Width) support • 5 channels I/O DMA support • Local I/O Bus (32bit) Control • 4 channels (CMYK) parallel/serial video output support • IEEE 1284 I/F Control with DMA (Compatible, Nibble, ECP) • Package: 456pin BGA
L2 Cache	• Not Used
SDRAM	• On Board 128MB • Data Bus Width: 64bit • Clock: 66MHz • 256Mbit device (x16bit, 4banks) x 4pcs • Assigned only CS0 in MPC107 Memory Control
SDRAM DIMM	• JEDEC Standard 168pin SDRAM DIMM x 2slots • 128MB or 256MB DIMM (PC100 or higher) support • Assigned CS1-2 in MPC107 Memory Control for DIMM Slot #0 • Assigned CS3-4 in MPC107 Memory Control for DIMM Slot #1 • Up to 512MB (256MB x 2slot) • SPD configuration by MPC107 I2C Control (ID = 4, 5)
Flash ROM (Boot)	• Sharp proprietary 72pin SO-DIMM • SO-DIMM Connector: DDK DMM2-SD72B-1131 • 8Mbit Flash chip (Sharp LH28F800BJE-PTTL90 x 1pcs) • Assigned MPC107 RCS0 (1MB) for Boot (CN3) • Data Bus Width: 8bit • Flash /RP (Reset/Power-Down) pin is connected to a CPU reset signal • Flash Write Protect pin and VCCW pin controlled by Jumper (JP1) • Flash RD/BY (Ready/Busy) status pin is monitored by D8501A GPIO12
Flash ROM (Code, Font)	• Sharp proprietary 72pin SO-DIMM • 72pin SO-DIMM Connector: DDK DMM2-SD72B-1131 • 2pcs of 32Mbit Flash chip (Sharp LH28F320BJE-PTTL90 x 2pcs) • Assigned D8501A IOCS1 (8MB) for CODE-1 (CN4) • Assigned D8501A IOCS2 (8MB) for CODE-2 (CN6) • Assigned D8501A IOCS3 (8MB) for CODE-3 (CN7) • Data Bus Width: 32bit • Flash /RP (Reset/Power-Down) pin is connected to a CPU reset signal • Flash RD/BY (Ready/Busy) status pin is monitored by D8501A GPIO12 • This Flash ROM space cannot be used as Instruction/Data cache area of CPU by limitation of D8501A.
Serial EEPROM	• 4Kbit Serial EEPROM (8pin DIP package) • I2C Bus serial Interface • Controlled by MPC107 I2C Control (ID = 0)
Parallel EEPROM	• Not Used • 64Kbit or 256Kbit Parallel EEPROM (DIP package) support • Data Width: 8bit • Assigned D8501A IOCS5
RTC	• JRC NJU6356EM • Controlled by D8501A GPIO • Battery backup by Mitsumi MM1134F backup IC
CPLD	• Device: Altera EPM3032ALC44-7 w/ V6 code • Used for D8501A Bug correction • Programmed via JTAG connector
PCI I/F	• 32bit / 33MHz PCI Bus support • Sharp proprietary Expansion I/F • 100pin Connector (JST 100P15.2-JXKS-GB x 1slot) for NIC • 100pin Connector (JST 100P9.2-JXKS-GB x 1slot) for HDD • IDSEL = AD14(CN9,NIC), AD15(CN12,HDD) • PCI Bus Arbiter: MPC107 Internal Arbiter
IEEE1284 I/F	• Controlled by D8501A • Compatible, Nibble, ECP Mode • 36pin IEEE 1284 Type-B Connector
Serial I/F	• Not mounted • 20-pin connector (CN5) for the External Serial Board (WHALE-SERIAL2 PWB)

Item	Specification
Engine I/F	• Sharp Whale Engine (ICU) I/F support • 100pin JAE TX24-100R-LT-H1 connector • Used as a Power Supply source • Video data is generated by Video Controller in D8501A • Communication with Engine is controlled by UART in D8501A • RGB input signals from Scanner
PIO	• Use D8501A GPIO port
HDD Board I/F	• Use 1 PCI I/F (CN12) • The PCI slot to which a part of power supply was extended is used.
NIC I/F	• Use 1 PCI I/F (CN9) • JCI NIC or Debug Ethernet Card support
USB I/F	• USB Rev. 1.1 support • Controlled by OKI ML60852A controller (16bit DMA) • Assigned D8501A IOCS0 • Use D8501A DMA Controller Ch.0
Interrupt	• Use MPC107 & D8501A Interrupt Controller
JTAG-	• CPU JTAG/COP I/F support (16pin connector) • XPC107 JTAG I/F (10pin connector) support • Possible to make chain connection of JTAG signals of CPU and XPC107.
Board	• 6-layer • 226.0mm x 300.0mm • a part (23mm x 65mm) of board is cut.to attach a cooling fan

4. Print area

(1) Image area, void area (Portrait)

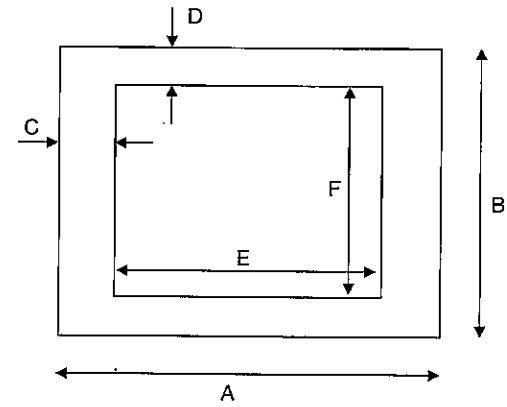


	A	B	C	D	E	F
A3 Wide	3600	5400	36	50	3528	5300
A3	3507	4960	71	50	3365	4860
A4	2480	3507	71	50	2338	3407
A5	1748	2480	71	50	1606	2380
A6	1240	1748	71	50	1098	1648
B4	3035	4299	71	50	2893	4199
B5	2149	3035	71	50	2007	2935
Ledger	3300	5100	75	50	3150	5000
Letter	2550	3300	75	50	2400	3200
Legal	2550	4200	75	50	2400	4100
Executive	2175	3150	75	50	2025	3050
Invoice	1650	2550	75	50	1500	2450
Foolscap	2550	3900	75	50	2400	3800
8K	3189	4606	71	50	3047	4506
16K	2303	3189	71	50	2161	3089

	A	B	C	D	E	F
DL	1299	2598	71	50	1157	2498
C5	1913	2704	71	50	1771	2604
COM10	1237	2850	75	50	1087	2750
Monarch	1162	2250	75	50	1012	2150
Postcard	1181	1748	71	50	1039	1648
Long type No. 3	1418	2776	71	50	1276	2676
Western type No. 2	1347	1914	71	50	1205	1814
Western type No. 4	1240	2776	71	50	1098	2676
Custom Paper	—	—	75	50	—	—

A: Physical Paper Size
B: Physical Paper Size
C: Printing offset
D: Printing offset
E: Printable Area
F: Printable Area

(2) Image area, void area (Landscape)



	A	B	C	D	E	F
A3 Wide	5400	3600	59	36	5282	3528
A3	4960	3508	59	50	4842	3408
A4	3508	2480	59	50	3390	2380
A5	2480	1748	59	50	2362	1648
A6	1748	1240	59	50	1630	1140
B4	4299	3035	59	50	4181	2935
B5	3035	2149	59	50	2917	2049
Ledger	5100	3300	60	50	4980	3200
Letter	3300	2550	60	50	3180	2450
Legal	4200	2550	60	50	4080	2450
Executive	3150	2175	60	50	3030	2075
Invoice	2550	1650	60	50	2430	1550
Foolscap	3900	2550	60	50	3780	2450
8K	4606	3189	59	50	4488	3089
16K	3189	2303	59	50	3071	2203
DL	2598	1299	59	50	2480	1199
C5	2704	1913	59	50	2586	1813
COM10	2850	1237	60	50	2730	1137
Monarch	2250	1162	60	50	2130	1062
Japanese Post Card	1748	1181	59	50	1630	1081
Long type No. 3	2776	1418	59	50	2658	1318
Western type No. 2	1914	1347	59	50	1796	1247
Western type No. 4	2776	1240	59	50	2658	1140
Custom Paper	—	—	60	50	—	—

A: Physical Paper Size
B: Physical Paper Size
C: Printing offset
D: Printing offset
E: Printable Area

5. Font

A. Resident font

Built-in fonts are European 81 fonts.

The printer built-in fonts can be used by installing the screen font and specifying the font from an application.

- Since the Line Printer font does not use the screen font, it cannot be used by the printer driver.

<PCL 81fonts>

Font Name	PCL 5c/5e code
Albertus Extra Bold	<esc>(***<esc>(s1p__v0s4b4362T
Albertus Medium	<esc>(***<esc>(s1p__v0s1b4362T
Antique Olive	<esc>(***<esc>(s1p__v0s0b4168T
Antique Olive Bold	<esc>(***<esc>(s1p__v0s3b4168T
Antique Olive Italic	<esc>(***<esc>(s1p__v1s0b4168T
Arial	<esc>(***<esc>(s1p__v0s0b16602T
Arial Bold	<esc>(***<esc>(s1p__v0s3b16602T
Arial Italic	<esc>(***<esc>(s1p__v1s0b16602T
Arial Bold Italic	<esc>(***<esc>(s1p__v1s3b16602T
CG Times	<esc>(***<esc>(s1p__v0s0b4101T
CG Times Bold	<esc>(***<esc>(s1p__v0s3b4101T
CG Times Italic	<esc>(***<esc>(s1p__v1s0b4101T
CG Times Bold Italic	<esc>(***<esc>(s1p__v1s3b4101T
CG Omega	<esc>(***<esc>(s1p__v0s0b4113T
CG Omega Bold	<esc>(***<esc>(s1p__v0s3b4113T
CG Omega Italic	<esc>(***<esc>(s1p__v1s0b4113T
CG Omega Bold Italic	<esc>(***<esc>(s1p__v1s3b4113T
Clarendon Condensed Bold	<esc>(***<esc>(s1p__v4s3b4140T
Coronet Italic	<esc>(***<esc>(s1p__v1s0b4116T
Courier	<esc>(***<esc>(s0p__h0s0b4099T
Courier Bold	<esc>(***<esc>(s0p__h0s3b4099T
Courier Italic	<esc>(***<esc>(s0p__h1s0b4099T
Courier Bold Italic	<esc>(***<esc>(s0p__h1s3b4099T
Garamond Antiqua	<esc>(***<esc>(s1p__v0s0b4197T
Garamond Halbfett	<esc>(***<esc>(s1p__v0s3b4197T
Garamond Kursiv	<esc>(***<esc>(s1p__v1s0b4197T
Garamond Kursiv Halbfett	<esc>(***<esc>(s1p__v1s3b4197T
Letter Gothic	<esc>(***<esc>(s0p__h0s0b4102T
Letter Gothic Bold	<esc>(***<esc>(s0p__h0s3b4102T
Letter Gothic Italic	<esc>(***<esc>(s0p__h1s0b4102T
Marigold	<esc>(***<esc>(s1p__v0s0b4297T
Times New Roman	<esc>(***<esc>(s1p__v0s0b16901T
Times New Roman Bold	<esc>(***<esc>(s1p__v0s3b16901T
Times New Roman Italic	<esc>(***<esc>(s1p__v1s0b16901T
Times New Roman Bold Italic	<esc>(***<esc>(s1p__v1s3b16901T
Univers Medium	<esc>(***<esc>(s1p__v0s0b4148T
Univers Bold	<esc>(***<esc>(s1p__v0s3b4148T
Univers Medium Italic	<esc>(***<esc>(s1p__v1s0b4148T
Univers Bold Italic	<esc>(***<esc>(s1p__v1s3b4148T
Univers Condensed Medium	<esc>(***<esc>(s1p__v4s0b4148T
Univers Condensed Bold	<esc>(***<esc>(s1p__v4s3b4148T
Univers Condensed Medium Italic	<esc>(***<esc>(s1p__v5s0b4148T
Univers Condensed Bold Italic	<esc>(***<esc>(s1p__v5s3b4148T
Wingdings	<esc>(579L<esc>(s1p__v0s0b31402T
Symbol	<esc>(19M<esc>(s1p__v0s0b16686T
LinePrinter	<esc>(0N<esc>(s0p16.66h8.5v0s0b0T

Font Name	PCL 5c/5e code
ITC Avant Garde Gothic Book	<esc>(***<esc>(s1p__v0s0b24607T
ITC Avant Garde Gothic Demi	<esc>(***<esc>(s1p__v0s2b24607T
ITC Avant Garde Gothic Book Oblique	<esc>(***<esc>(s1p__v1s0b24607T
ITC Avant Garde Gothic Demi Oblique	<esc>(***<esc>(s1p__v1s2b24607T
ITC Bookman Light	<esc>(***<esc>(s1p__v0s-3b24623T
ITC Bookman Light Demi	<esc>(***<esc>(s1p__v0s2b24623T
ITC Bookman Light Italic	<esc>(***<esc>(s1p__v1s-3b24623T
ITC Bookman Light Demi Italic	<esc>(***<esc>(s1p__v1s2b24623T
CourierPS	<esc>(***<esc>(s0p__h0s0b24579T
CourierPS Bold	<esc>(***<esc>(s0p__h0s3b24579T
CourierPS Oblique	<esc>(***<esc>(s0p__h1s0b24579T
CourierPS Bold Oblique	<esc>(***<esc>(s0p__h1s3b24579T
Helvetica	<esc>(***<esc>(s1p__v0s0b24580T
Helvetica Bold	<esc>(***<esc>(s1p__v0s3b24580T
Helvetica Oblique	<esc>(***<esc>(s1p__v1s0b24580T
Helvetica Bold Oblique	<esc>(***<esc>(s1p__v1s3b24580T
Helvetica Narrow	<esc>(***<esc>(s1p__v4s0b24580T
Helvetica Narrow Bold	<esc>(***<esc>(s1p__v4s3b24580T
Helvetica Narrow Oblique	<esc>(***<esc>(s1p__v5s0b24580T
Helvetica Narrow Bold Oblique	<esc>(***<esc>(s1p__v5s3b24580T
New Century Schoolbook	<esc>(***<esc>(s1p__v0s0b24703T
New Century Schoolbook Bold	<esc>(***<esc>(s1p__v0s3b24703T
New Century Schoolbook Italic	<esc>(***<esc>(s1p__v1s0b24703T
New Century Schoolbook Bold Italic	<esc>(***<esc>(s1p__v1s3b24703T
Palatino Roman	<esc>(***<esc>(s1p__v0s0b24591T
Palatino Bold	<esc>(***<esc>(s1p__v0s3b24591T
Palatino Italic	<esc>(***<esc>(s1p__v1s0b24591T
Palatino Bold Italic	<esc>(***<esc>(s1p__v1s3b24591T
SymbolPS	<esc>(19M<esc>(s1p__v0s0b45358T
Times Roman	<esc>(***<esc>(s1p__v0s0b25093T
Times Bold	<esc>(***<esc>(s1p__v0s3b25093T
Times Italic	<esc>(***<esc>(s1p__v1s0b25093T
Times Bold Italic	<esc>(***<esc>(s1p__v1s3b25093T
ITC Zapf Chancery Medium Italic	<esc>(***<esc>(s1p__v1s0b45009T
ITC Zapf Dingbats	<esc>(14L<esc>(s1p__v0s0b45101T

(For "***" area, refer to the symbol set below.)

<PCL Symbol sets>

Symbol Set Name	PCL 5c / 5e Symbol Set Code	Windows Character Set
Windows 3.1 Latin 1	19U	ANSI_CHARSET
Windows 3.1 Latin 2	9E	EASTEUROPE_CHARSET
Windows 3.1 Latin 5	5T	TURKISH_CHARSET
Windows 3.1 Baltic	19L	BALTIC_CHARSET

B. Screen font

The screen fonts attached to the printer driver are as follows.

<PCL 81fonts>

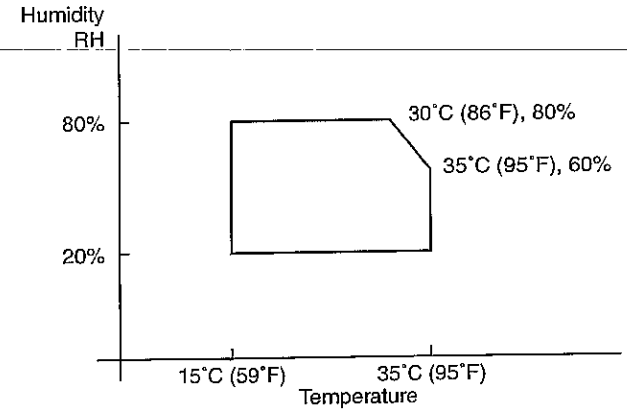
Family Name	Font Name	File Name
Albertus Extra Bold	Albertus Extra Bold	92642_UB.ttf
Albertus Medium	Albertus Medium	92639_UB.ttf
Antique Olive	Antique Olive	91119_UB.ttf
	Antique Olive Bold	91118_UB.ttf
	Antique Olive Italic	91846_UB.ttf
Arial	Arial	*
	Arial Bold	*
	Arial Italic	*
	Arial Bold Italic	*
CG Times	CG Times	92500_UB.ttf
	CG Times Bold	92504_UB.ttf
	CG Times Italic	92501_UB.ttf
	CG Times Bold Italic	92505_UB.ttf
CG Omega	CG Omega	92506_UB.ttf
	CG Omega Bold	92510_UB.ttf
	CG Omega Italic	92507_UB.ttf
	CG Omega Bold Italic	92511_UB.ttf
Clarendon Condensed	Clarendon Condensed Bold	90270_UB.ttf
Coronet	Coronet Italic	90249_UB.ttf
Courier	Courier	93950_UB.ttf
	Courier Bold	93952_UB.ttf
	Courier Italic	93951_UB.ttf
	Courier Bold Italic	93953_UB.ttf
Garamond	Garamond Antiqua	91545_UB.ttf
	Garamond Halbfett	91547_UB.ttf
	Garamond Kursiv	91546_UB.ttf
	Garamond Kursiv Halbfett	91548_UB.ttf
Letter Gothic	Letter Gothic	93777_UB.ttf
	Letter Gothic Bold	93779_UB.ttf
	Letter Gothic Italic	93778_UB.ttf
Marigold	Marigold	94073_UB.ttf
Times New Roman	Times New Roman	*
	Times New Roman Bold	*
	Times New Roman Italic	*
	Times New Roman Bold Italic	*
Univers	Univers Medium	94021_UB.ttf
	Univers Bold	94023_UB.ttf
	Univers Medium Italic	94022_UB.ttf
	Univers Bold Italic	94024_UB.ttf
Univers Condensed	Univers Condensed Medium	94029_UB.ttf
	Univers Condensed Bold	94030_UB.ttf
	Univers Condensed Medium Italic	94039_UB.ttf
	Univers Condensed Bold Italic	94040_UB.ttf
Wingdings	Wingdings	*
Symbol	Symbol	*
LinePrinter	LinePrinter	No screen font
ITC Avant Garde Gothic	ITC Avant Garde Gothic Book	11059_U.ttf
	ITC Avant Garde Gothic Demi	11058_U.ttf
	ITC Avant Garde Gothic Book Oblique	11671_U.ttf
	ITC Avant Garde Gothic Demi Oblique	11673_U.ttf
ITC Bookman	ITC Bookman Light	11454_U.ttf
	ITC Bookman Light Italic	11455_U.ttf
	ITC Bookman Light Demi	11467_U.ttf
	ITC Bookman Light Demi Italic	11468_U.ttf
CourierPS	CourierPS	13950_UB.ttf
	CourierPS Oblique	13951_UB.ttf
	CourierPS Bold	13952_UB.ttf
	CourierPS Bold Oblique	13953_UB.ttf
Helvetica	Helvetica	14459_UB.ttf
	Helvetica Oblique	14460_U.ttf
	Helvetical Bold	14461_UB.ttf
	Helvetica Bold Oblique	14462_U.ttf
Helvetica Narrow	Helvetica Narrow	13726_U.ttf
	Helvetica Narrow Oblique	13727_U.ttf
	Helvetica Narrow Bold	13728_U.ttf
	Helvetica Narrow Bold Oblique	13729_U.ttf
New Century Schoolbook	New Century Schoolbook	13730_U.ttf
	New Century Schoolbook Italic	13731_U.ttf
	New Century Schoolbook Bold	13732_U.ttf
	New Century Schoolbook Bold Italic	13733_U.ttf
Palatino	Palatino Roman	13738_U.ttf
	Palatino Italic	13739_UB.ttf
	Palatino Bold	13740_UB.ttf
	Palatino Bold Italic	13741_UB.ttf
SymbolPS	SymbolPS	14463.ttf
Times	Times Roman	34455_U.ttf
	Times Italic	34456_UB.ttf
	Times Bold	34457_UB.ttf
	Times Bold Italic	34458_UB.ttf
ITC Zapf Chancery	ITC Zapf Chancery Medium Italic	13775_U.ttf
ITC Zapf Dingbats	ITC Zapf Dingbats	13776.ttf

* For Arial family, Times New Roman family, Symbol, and Windings, use Windows system fonts.

6. Environment conditions

A. Operating environment conditions

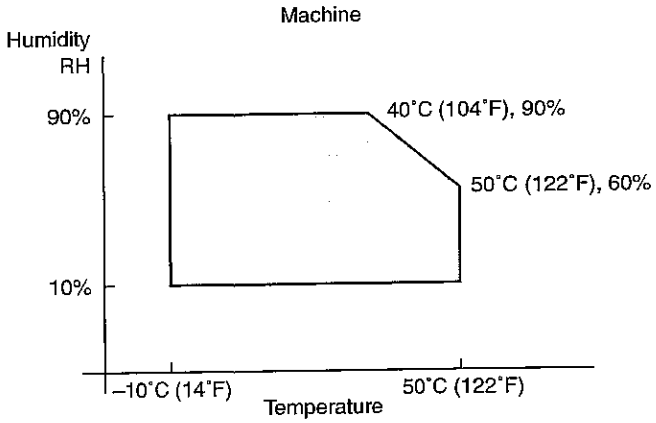
(1) Temperature and humidity

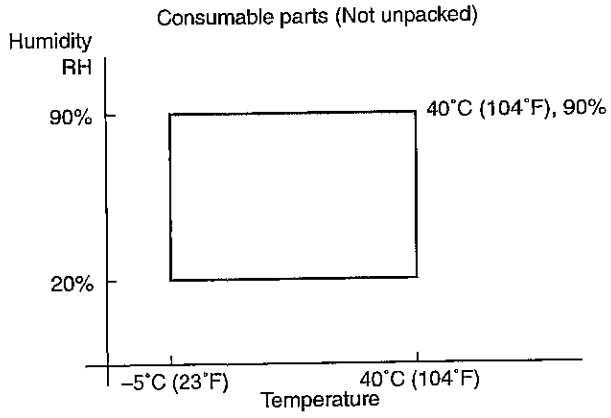


(2) Power voltage and frequency

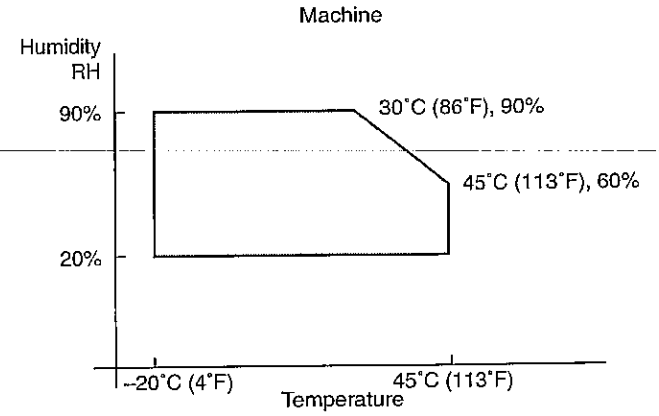
Power voltage	Specified voltage ±10%
Power frequency	Specified frequency ±2%

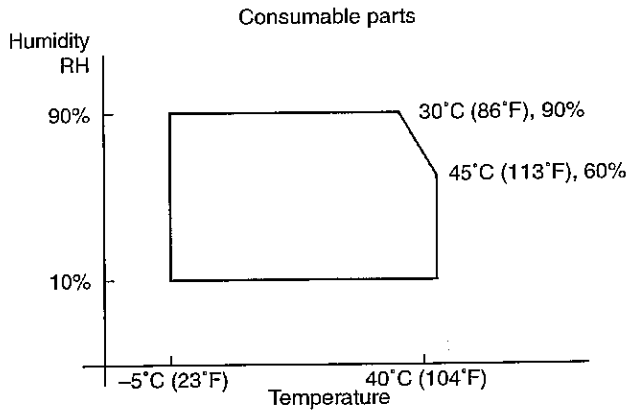
B. Storage environment conditions





C. Transit environment conditions





D. Standard temperature and humidity

Temperature	20 to 25°C (68 to 77°F)
Humidity	65 ±5%

[4] CONSUMABLE PARTS

1. Supply system table

A. USA/Canada

	Part name	Model name	Content		Life	Packing	Remark
1	Toner (Black)	AR-C26TBU	Toner cartridge (Black)	x 1	16.7K (A4/LT 6%)	10	For A4/LT 5%, life is 20K.
2	Color toner (Cyan)	AR-C26TCU	Toner cartridge (Cyan)	x 1	5.5K (A4/LT 10%)	10	
3	Color toner (Magenta)	AR-C26TMU	Toner cartridge (Magenta)	x 1	5.5K (A4/LT 10%)	10	
4	Color toner (Yellow)	AR-C26TYU	Toner cartridge (Yellow)	x 1	5.5K (A4/LT 10%)	10	
5	Photoconductor drum cartridge	AR-C26DU	Drum cartridge (including OPC drum & unit parts) Color identification seal (Y/M/C/K)	x 1 x 1 each	50K	10	
6	Drum	AR-C26DR	OPC Drum	x 1	50K	10	
7	Main charger kit	AR-C26MK	Charging unit Cleaning blade Toner reception seal	x 1 x 1 x 1	50K	10	

B. Europe/Australia

	Part name	Model name	Content		Life	Packing	Remark
1	Toner (Black)	AR-C26TBE	Toner cartridge (Black)	x 1	16.7K (A4/LT 6%)	10	For A4/LT 5%, life is 20K.
2	Color toner (Cyan)	AR-C26TCE	Toner cartridge (Cyan)	x 1	5.5K (A4/LT 10%)	10	
3	Color toner (Magenta)	AR-C26TME	Toner cartridge (Magenta)	x 1	5.5K (A4/LT 10%)	10	
4	Color toner (Yellow)	AR-C26TYE	Toner cartridge (Yellow)	x 1	5.5K (A4/LT 10%)	10	
5	Photoconductor drum cartridge	AR-C26DUE	Drum cartridge (including OPC drum & unit parts) Color identification seal (Y/M/C/K)	x 1 x 1 each	50K	10	
6	Drum	AR-C26DM	OPC Drum	x 1	50K	10	
7	Main charger kit	AR-C26MKE	Charging unit Cleaning blade Toner reception seal	x 1 x 1 x 1	50K	10	

C. Central & South America/Asia

	Part name	Model name	Content		Life	Packing	Remark
1	Toner (Black)	AR-C26TBA	Toner cartridge (Black)	x 1	16.7K (A4/LT 6%)	10	For A4/LT 5%, life is 20K.
2	Color toner (Cyan)	AR-C26TCA	Toner cartridge (Cyan)	x 1	5.5K (A4/LT 10%)	10	
3	Color toner (Magenta)	AR-C26TMA	Toner cartridge (Magenta)	x 1	5.5K (A4/LT 10%)	10	
4	Color toner (Yellow)	AR-C26TYA	Toner cartridge (Yellow)	x 1	5.5K (A4/LT 10%)	10	
5	Photoconductor drum cartridge	AR-C26DU	Drum cartridge (including OPC drum & unit parts) Color identification seal (Y/M/C/K)	x 1 x 1 each	50K	10	
6	Drum	AR-C26DR	OPC Drum	x 1	50K	10	
7	Main charger kit	AR-C26MK	Charging unit Cleaning blade Toner reception seal	x 1 x 1 x 1	50K	10	

D. Philippine/Taiwan/SMEF

	Part name	Model name	Content		Life	Packing	Remark
1	Toner (Black)	AR-C26TBP	Toner cartridge (Black)	x 1	16.7K (A4/LT 6%)	10	For A4/LT 5%, life is 20K.
2	Color toner (Cyan)	AR-C26TCP	Toner cartridge (Cyan)	x 1	5.5K (A4/LT 10%)	10	
3	Color toner (Magenta)	AR-C26TMP	Toner cartridge (Magenta)	x 1	5.5K (A4/LT 10%)	10	
4	Color toner (Yellow)	AR-C26TYP	Toner cartridge (Yellow)	x 1	5.5K (A4/LT 10%)	10	
5	Photoconductor drum cartridge	AR-C26DU	Drum cartridge (including OPC drum & unit parts) Color identification seal (Y/M/C/K)	x 1 x 1 each	50K	10	
6	Drum	AR-C26DR	OPC Drum	x 1	50K	10	
7	Main charger kit	AR-C26MK	Charging unit Cleaning blade Toner reception seal	x 1 x 1 x 1	50K	10	

E. SOCC parts

	Part name	Model name	Content		Life	Packing	Remark
1	Toner (Black)	AR-C26T1-C	Toner cartridge (Black)	x 1	16.7K (A4/LT 6%)	10	For A4/LT 5%, life is 20K.
2	Color toner (Cyan)	AR-C26T6-C	Toner cartridge (Cyan)	x 1	5.5K (A4/LT 10%)	10	
3	Color toner (Magenta)	AR-C26T7-C	Toner cartridge (Magenta)	x 1	5.5K (A4/LT 10%)	10	
4	Color toner (Yellow)	AR-C26T8-C	Toner cartridge (Yellow)	x 1	5.5K (A4/LT 10%)	10	
5	Photoconductor drum cartridge	AR-C26DU-C	Drum cartridge (including OPC drum & unit parts) Color identification seal (Y/M/C/K)	x 1 x 1 each	50K	10	
6	Drum	AR-C26DR-C	OPC Drum	x 1	50K	10	
7	Main charger kit	AR-C26MK-C	Charging unit Cleaning blade Toner reception seal	x 1 x 1 x 1	50K	10	

F. SRH parts

	Part name	Model name	Content		Life	Packing	Remark
1	Toner (Black)	AR-C26TB-C	Toner cartridge (Black)	x 1	16.7K (A4/LT 6%)	10	For A4/LT 5%, life is 20K.
2	Color toner (Cyan)	AR-C26TC-C	Toner cartridge (Cyan)	x 1	5.5K (A4/LT 10%)	10	
3	Color toner (Magenta)	AR-C26TM-C	Toner cartridge (Magenta)	x 1	5.5K (A4/LT 10%)	10	
4	Color toner (Yellow)	AR-C26TY-C	Toner cartridge (Yellow)	x 1	5.5K (A4/LT 10%)	10	
5	Photoconductor drum cartridge	AR-C26DU-C	Drum cartridge (including OPC drum & unit parts) Color identification seal (Y/M/C/K)	x 1 x 1 each	50K	10	
6	Drum	AR-C26DR-C	OPC Drum	x 1	50K	10	
7	Main charger kit	AR-C26MK-C	Charging unit Cleaning blade Toner reception seal	x 1 x 1 x 1	50K	10	

2. Consumables (kit, unit)

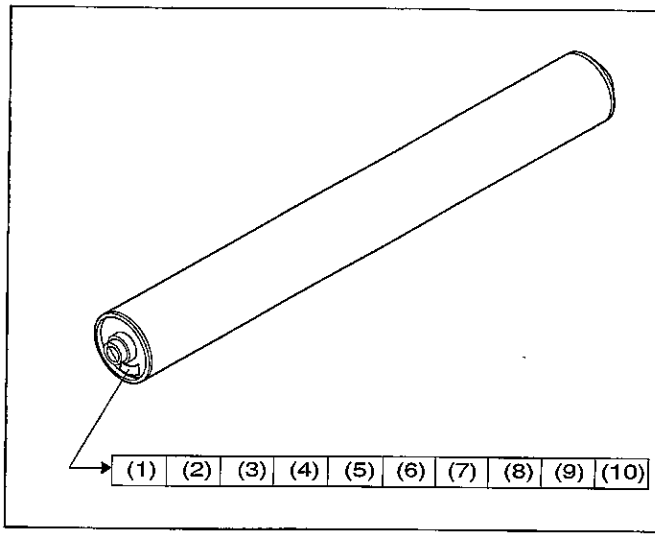
	Part name	Model name	Content		Life
1	Upper heat roller kit	AR-C26UH	Upper heat roller Heat roller 60T gear Upper heat roller bearing Thermistor Upper heat roller stopper	x 1 x 1 x 2 x 1 x 2	100K *1
2	Lower heat roller kit	AR-C26LH	Lower heat roller Lower heat roller bearing Thermistor Lower heat roller stopper Fusing separation pawl lower	x 1 x 2 x 1 x 2 x 2	100K *1
3	Transfer belt kit	AR-C26TT	Transfer belt	x 1	100K *1
4	Transfer roller kit	AR-C26TX	Transfer roller	x 4	100K
5	Transfer waste toner tank unit	AR-C26HB	Transfer waste toner tank unit	x 1	100K
6	Filter kit	AR-C26FL	Ozone filter A Ozone filter B	x 1 x 1	50K
7	Saddle staple cartridge	AR-SC2	—		
5	Fusing unit	AR-C26FU (230V heater lamp) AR-C26FU1 (120V heater lamp) AR-C26FU2 (100V heater lamp)	Fusing unit for servicing (including upper/lower heater lamps)		*1
6	Transfer belt unit	AR-C26TU	Transfer unit for servicing		100K *1

*1: Replace at 100K or within 2 years

3. Photoconductor, developer, toner

A. Lot number identification and the term of validity

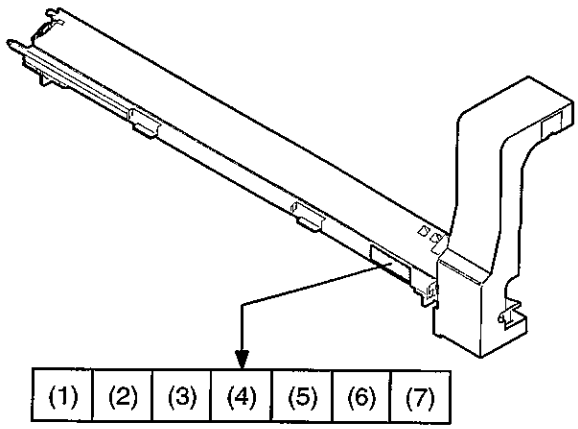
(1) Photoconductor



(1) Figure
2 for this model
(2) Alphabet
Indicates the model support code.
(3) Figure
Indicates the end digit of the production year.
(4) Figure or X, Y, Z
Indicates the production month. (X= October, Y= November, Z= December)
(5) (6) Figure
Indicates the production day.
(7) Figure or X, Y, Z
Indicates the packing month. (X= October, Y= November, Z= December)
(8) (9) Figure
Indicates the packing day.
(10) Figure or alphabet
Indicates the production division.

The term of validity: 36 months from the production day (month).

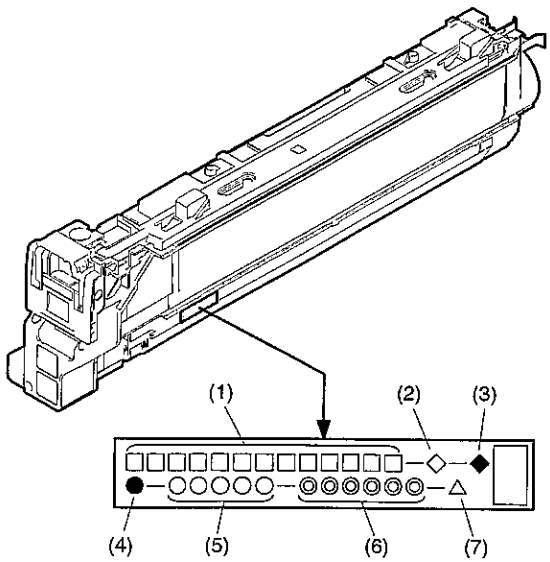
(2) Photoconductor cartridge



(1) Figure
Version No.
(2) Figure
The end digit of the year.
(3) Alphabet
Production code (B for SOCC)
(4) Alphabet
Destination code
(5) (6) Figure
Production day
(7) Figure or X, Y, Z
Indicates the production month. (X= October, Y= November, Z= December)

The term of validity: 24 months from the production day (month).

(3) Toner cartridge



(1) Alphabet or figure
Unit code
(2) Alphabet
Destination code
(3) Alphabet
Skating
(4) Alphabet
Production site code
(5) Figure
Serial number (5 digits)
(6) Figure
Production year, month, day (6 digits)
(7) Alphabet
Version No. (A ~ sequentially revised)

The term of validity: 24 months from the production day (month).

[5] UNPACKING AND INSTALLATION

1. Installing (use) conditions

Before installing the machine, check that the following installing (use) conditions are satisfied.

If the installing (use) conditions are not satisfied, the machine may not display full performances, resulting in troubles. It may also cause safety problems. Therefore, be sure to arrange the installing (use) conditions before setting up the machine.

No.	Content
1	Bringing space
2	Installing space
3	Power source (Capacity, fluctuation, safety)
4	Floor strength
5	Direct rays of the sun, dust, temperature, humidity, gases, chemicals

A. Bringing space

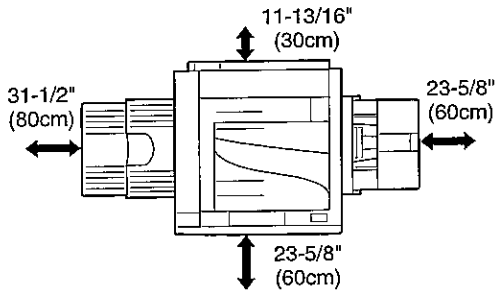
For installation of a large size machine, be sure to check that the door size is great enough before bringing in.

B. Installing space

The following space must be provided around the machine in order to assure machine performances and proper operations.

If any option is installed, provide the additional space for installing it.

Especially the space at the rear of the machine must be provided sufficiently. If not, the machine cannot exhibit functions against heat and dust, causing some troubles.



C. Power source (Capacity, voltage, frequency, safety, plug)

If the power specifications are not satisfied, the machine cannot exhibit full performances and may cause safety trouble.

Strictly observe the following specifications.

(1) Power capacity

Check that the following power capacity is satisfied. If not, additionally provide a power source.

Current capacity

Japan: 20A or more

100V: 15A or more

200V: 10A or more

(2) Power voltage

Measure the voltage during copying to check that the voltage is in the range of the specified voltage ±10%.

If the voltage is outside the specified range, use thicker lead wires to reduce impedance.

(An electrical work is required.)

Use of a step-up transformer is also available. In this case, the capacity must be great enough for the max. power consumption of the machine.

(3) Power frequency, waveform

The frequency must be within the range of the specified frequency ±2%. If power waveform is deformed, a trouble may occur.

(4) Safety

Be sure to properly ground the machine.

(5) Power plug

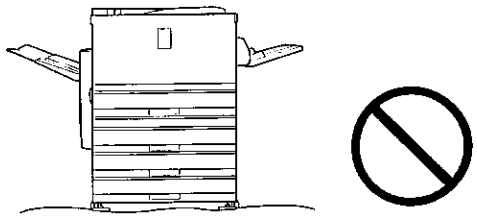
Check the form of the power plug. If the shape does not match, do not use it.

D. Floor strength and level

This machine is considerably heavy and becomes heavier with an option installed.

The floor must be strong enough for assuring safety.

If not, color shift or image distortion may occur.

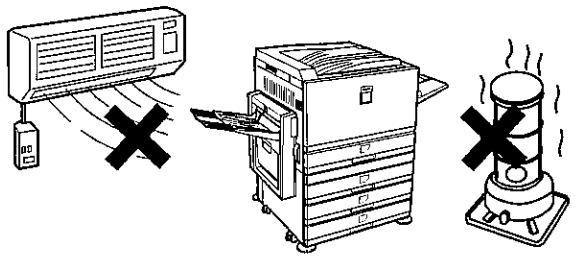


E. Direct rays of the sun, dust, temperature, humidity, gasses, chemicals, vibration

(1) Temperature and humidity

This machine is designed to perform properly under the specified temperature and humidity. If the temperature and humidity exceeds the specified range, the machine may not operate properly and or cause equipment failure.

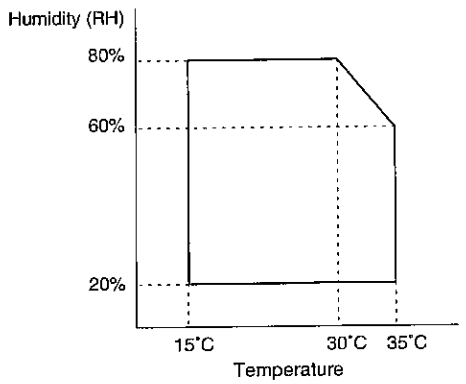
Especially when the humidity is too high, paper absorbs humidity to cause a paper jam or dirty copy.



(Do not install the machine near a stove, a humidifier, or an air conditioner.)

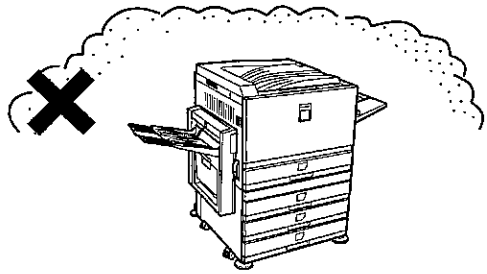
Do not install the machine near a heater, a cooler, or a humidifier.

Dew may be formed inside the machine to cause a trouble. Use enough care for ventilation.



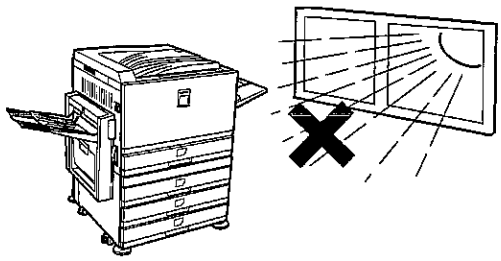
(2) Dust

If dust enters the machine, it may cause dirty copy and a paper jam, resulting in a shortened lifetime.



(3) Direct rays of the sun

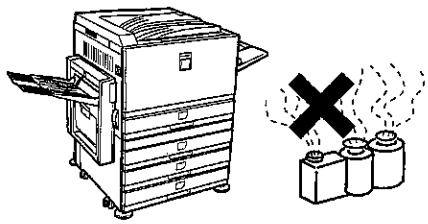
If the machine is installed under the rays of the sun, the exterior of the machine may be discolored and abnormal copies may be produced.



(4) Gases and chemicals

Do not install the machine at a place where there are gases and chemicals. Especially be careful to avoid installation near a diazo-type copier, which produces ammonium gas.

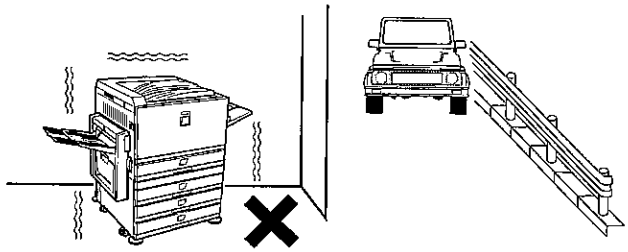
Copy quality may be adversely affected and a trouble may be caused.



(5) Vibration

Avoid installation near a machine which produces vibrations.

If vibrations are applied to the copier machine, copy images may be deflected and a trouble may be caused.



2. Transit and delivery

No.	Content	Method
1	Implements, facility, and man power	Use a forklift. (If no forklift is available, manpower of four persons is required.)
2	Delivery	Transit must be made in packed condition.

A. Implements, facility, and manpower

It is recommendable to use a forklift for bringing in the machine for safety.

If no forklift is available, man-power of four persons is required. The machine is considerably heavy, and requires safety precautions for delivery and installation.

Transit of the machine must be made in packed condition to the installing place.

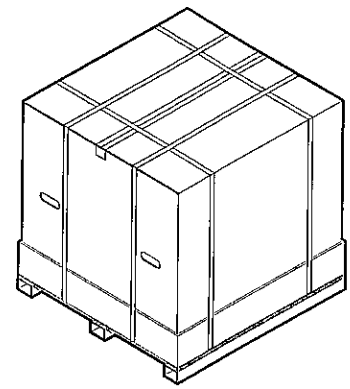
B. Delivery

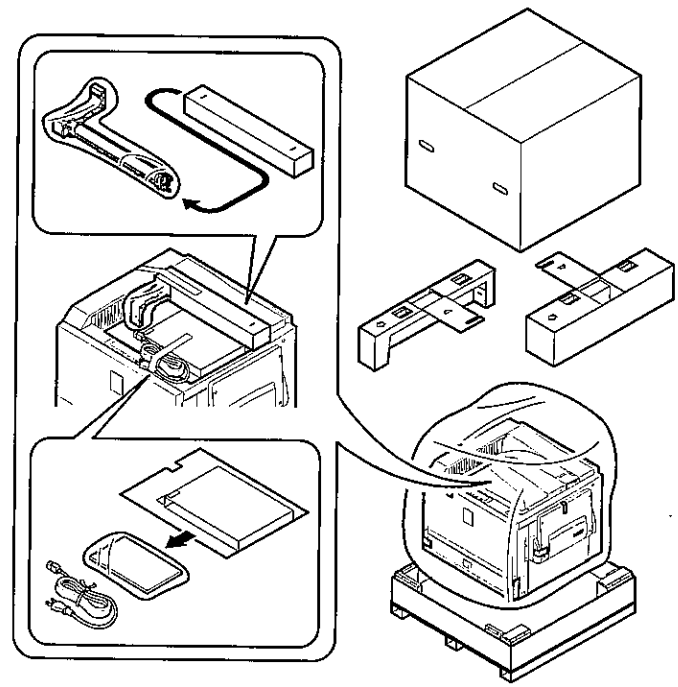
Remove the packing materials prior to installation in the ofice environment.

3. Unpacking

A. Unpacking procedure

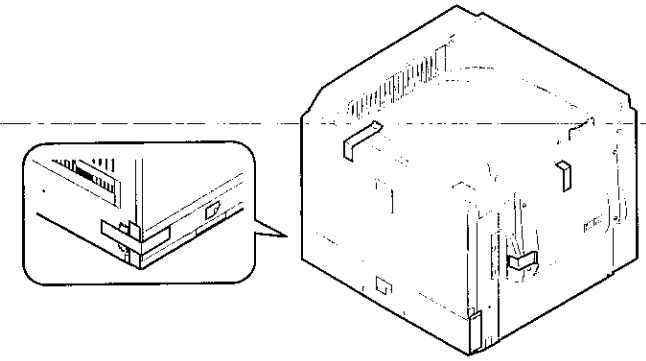
1) Remove the PP band.
2) Remove the top case.
3) Remove the internal packing pads and the items packed together with the machine.
4) Remove the machine from the package.



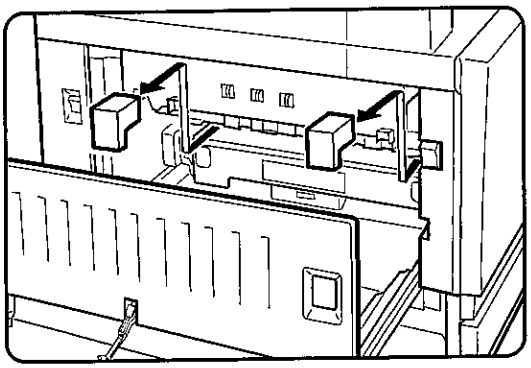


Fixing tape and protection pads removal

1) Remove the fixing tape and protection pads from the machine.

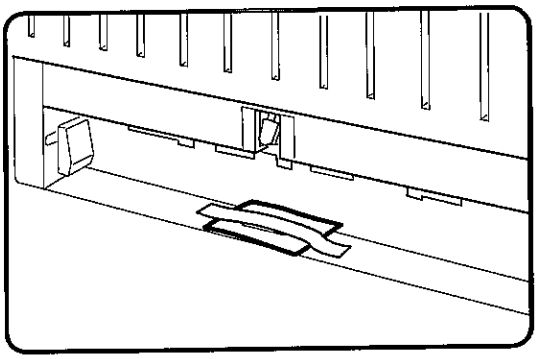


2) Open the left door, and remove the transfer fixing pads.

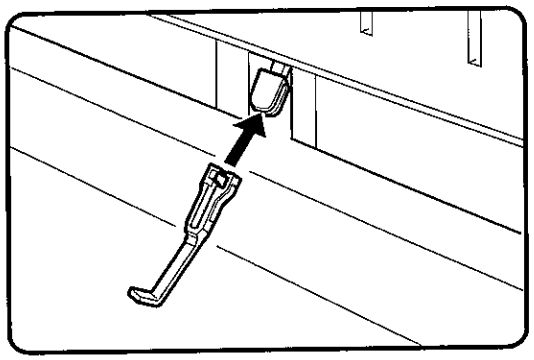


Actuator installation

1) Remove the actuator fixed to the left door.



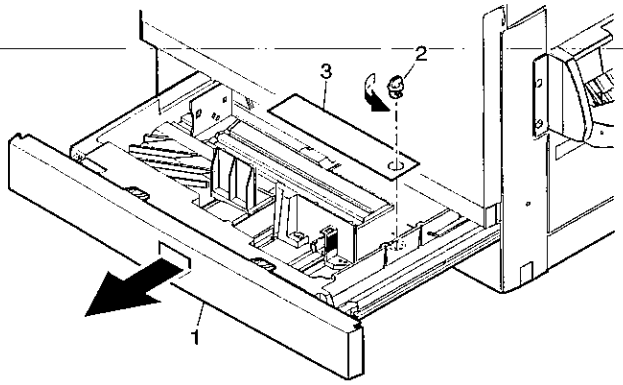
2) Install the actuator to the paper exit port of the left door.



4. Lock release

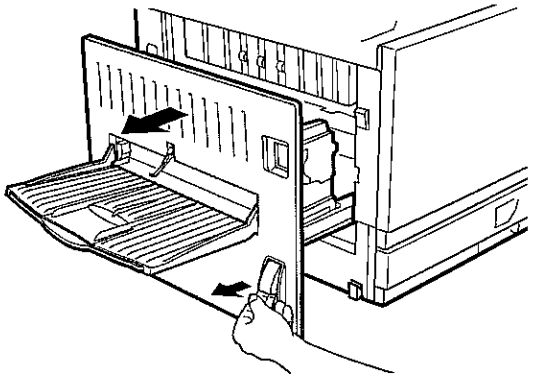
A. Main body cassette lock release

1) Pull out the main body cassette.
2) Remove the rotation plate fixing pad and remove the caution label.

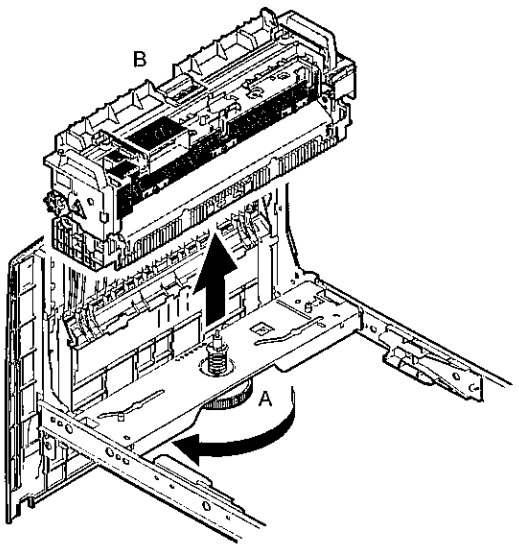


B. Transfer unit pressure release

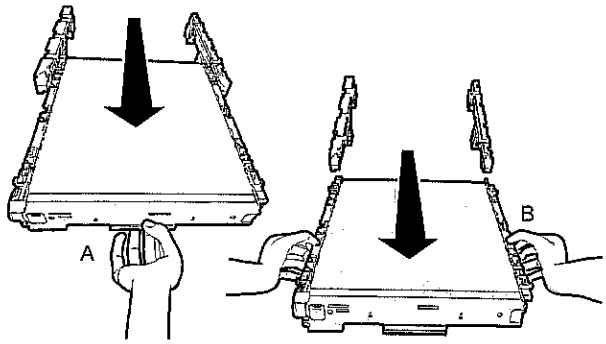
1) Pull the knob and open the left door.



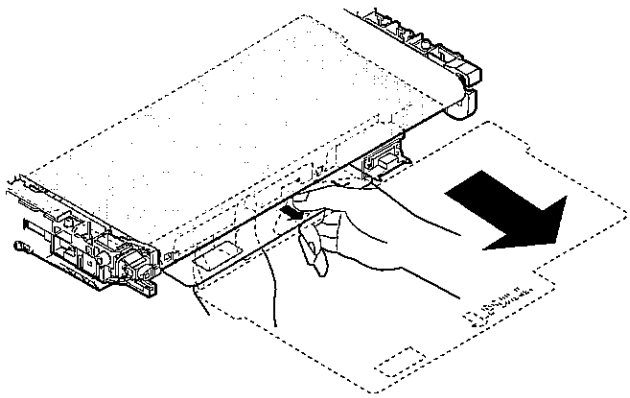
2) Loosen the roller knob (A), and remove the fusing unit (B).

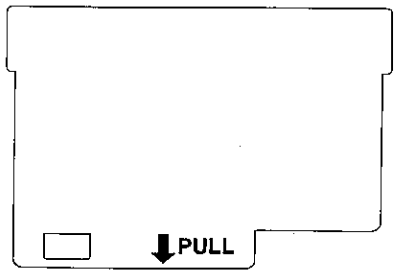


3) Hold section A of the transfer unit and pull it out so that the both sides of the transfer unit can be held.
4) Hold sections B and remove the transfer unit.

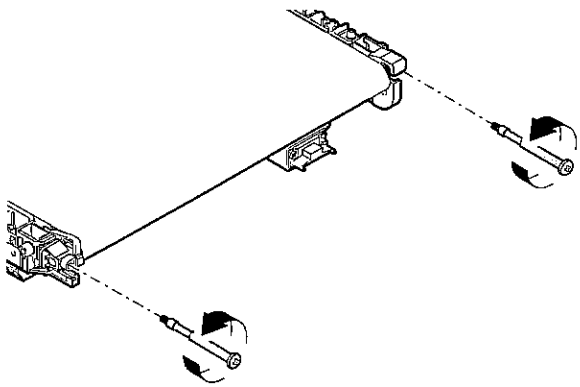


5) Remove the transfer belt protect sheet.





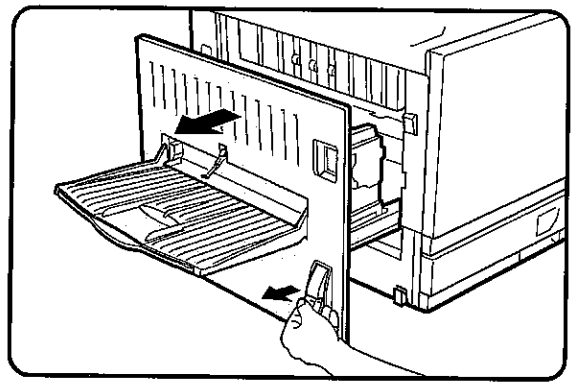
6) Remove the screw and apply a tension to the transfer belt.



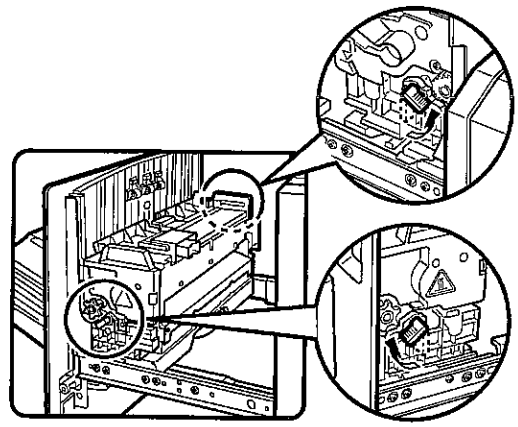
7) Install the transfer unit to the machine.

5. Fusing heat roller pressing (F/R)

1) Pull the knob and open the left door.



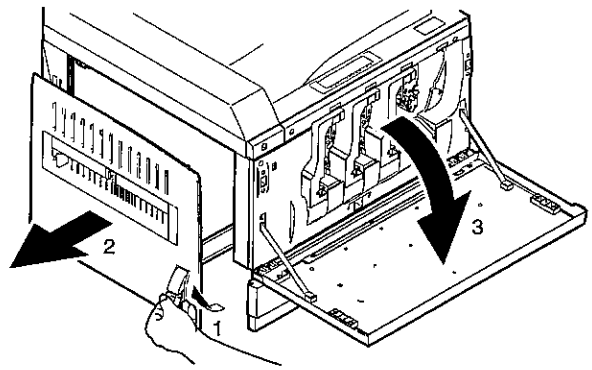
2) Turn the pressure release lever to press.



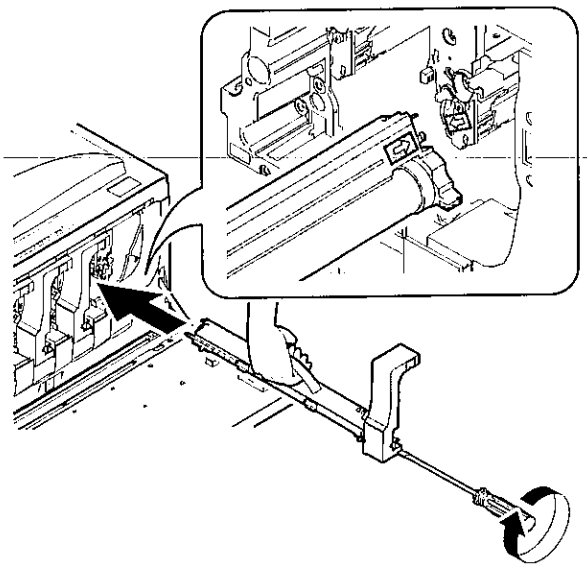
Note: If the machine is left for one month or more, the heat roller rubber may be deformed. In such a case, therefore, release the pressure.

6. Black drum cartridge insertion

1) Pull the knob and open the left door.
2) Open the front cover.

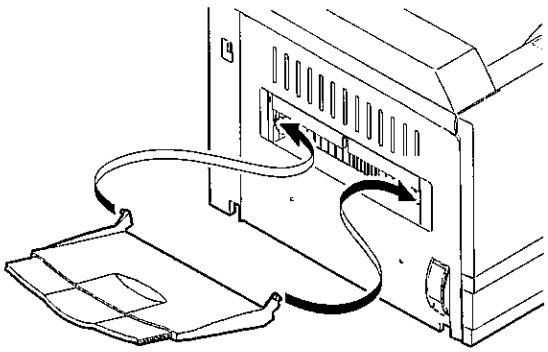


3) Insert the black drum cartridge, and fix it with a screw.



7. Paper exit tray installation

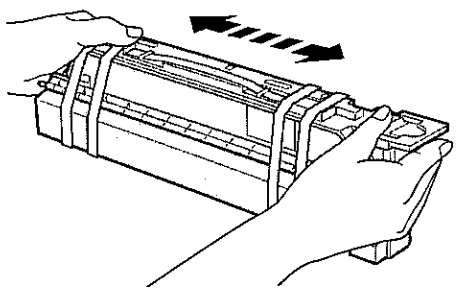
1) Install the paper exit tray to the left door.



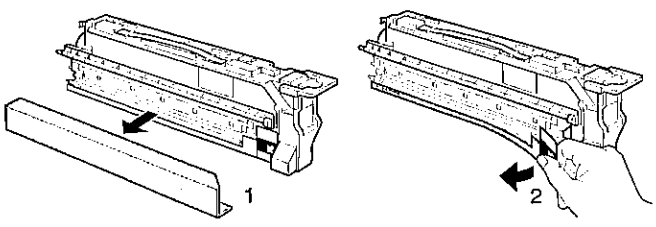
Note: The paper exit tray may be supplied as a standard part in some destinations, and may be an option in some other destinations.

8. Toner cartridges installation

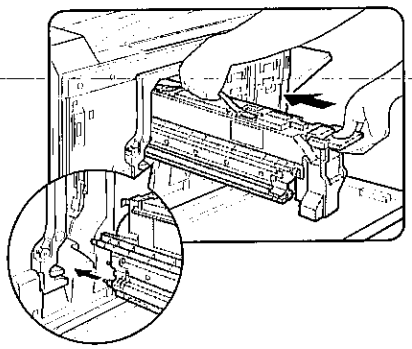
1) Shake the toner cartridge horizontally several times.



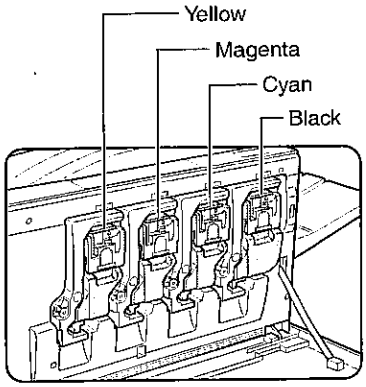
2) Remove the tape, and remove the protection pad.



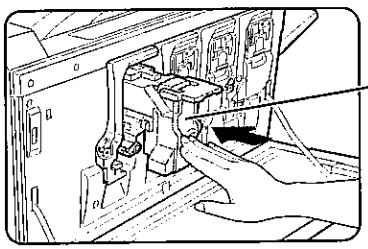
3) Open the front cover.
4) Insert the toner cartridge.
   - As shown below, fit the cartridge with the insertion port and push it in.



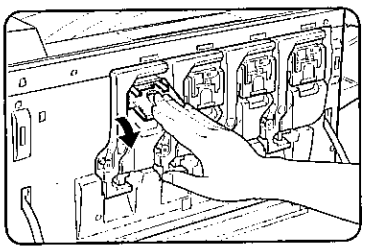
Note: Be sure to install the color cartridges to their proper positions. Avoid instillation to a different color position.
[Color toner cartridge positions]



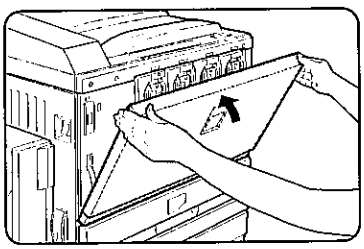
5) Insert the cartridge securely until it locks.



6) Return the cartridge lever to the original position.

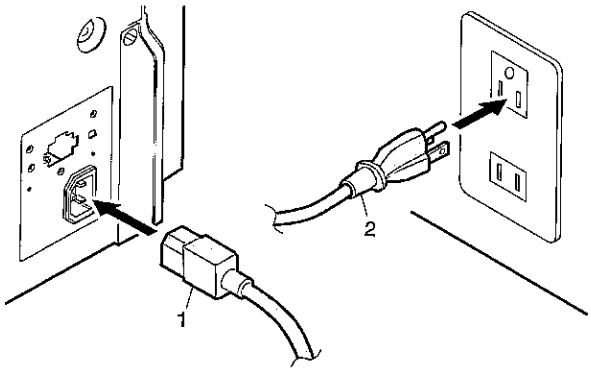


7) Close the front cover.



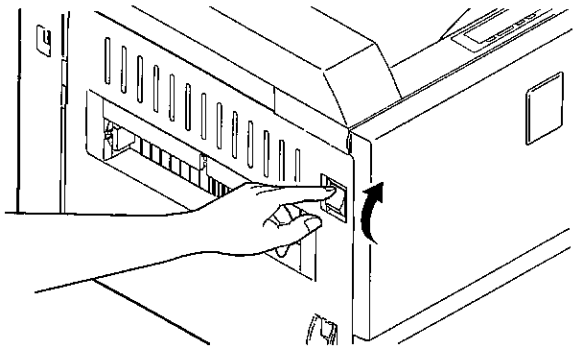
9. AC cord connection

1) Insert the AC power plug into the connector at the rear of the machine, and connect the other end to the power outlet.



10. Machine power ON

1) Turn on the power switch on the left side of the machine.



11. Specifications setup

Used to set the specifications with SIM26 according to the customer's request.

SIM No		Content
26	6	Used to set the destination.

To customize the following items after completion of the destination setup, change the set values.

SIM No		Content
26	2	Used to set the large capacity paper feed tray paper size.
		Used to set the detection paper size and display when using 8.5 x 13 size paper and document.
		Used to set the display form of the paper weight (LBS or GRAM).
	5	Used to set the count mode of the total counter and the maintenance counter.
	18	Used to set YES/NO of the toner save mode (Only in UK and Japan versions) For other destination versions, this setup is made by the user program.
	52	Used to set YES/NO of counting when non-print paper is passed through each counter.
	65	Used to set the limit number of sheets for stapling.
	69	Used to set the TONER NEAR END SET (CONTINUE or STOP) Default (UK: STOP, Others: CONTINUE)

On completion of the installation of the AR-F13 finisher, please change the default output tray of the machine to the top tray of the finisher.

12. Image quality check

Check the following items related to image quality. For details of the adjustment and checking procedures, refer to the chapter of adjustments.

1) Image focus, image skew (Refer to ADJ 3.)
2) Image registration (Refer to ADJ 4.)
3) Image position/print area (Refer to ADJ 5.)
4) Color balance, density (Refer to ADJ 10.)

Check that the above items are normal. If not, make the adjustment.

13. Function and operation check

Check that the following operations are normal.

Check item		Installation
Key input operation (Operation panel)		
Display (Operation panel)		
Paper feed operation	Manual paper feed	
	Machine paper tray	
	Desk unit paper feed tray	When the desk unit is installed.
	Large capacity paper feed tray	When the large capacity paper feed tray is installed.
Paper size detection operation		
Bookbinding operation		When the finisher is installed.
Stapling operation		When the finisher is installed.
Grouping operation		When the finisher is installed.
Sorting operation		When the finisher is installed.

14. Setup and adjustment data recording

Print the various setup data and the adjustment data (list) with SIM22-6 and keep the data.

In case of a memory trouble, if the data are not kept, all the adjustments must be made again.

If the data are kept, the setup values and the adjustment values can be entered without adjustments, shortening the servicing time.

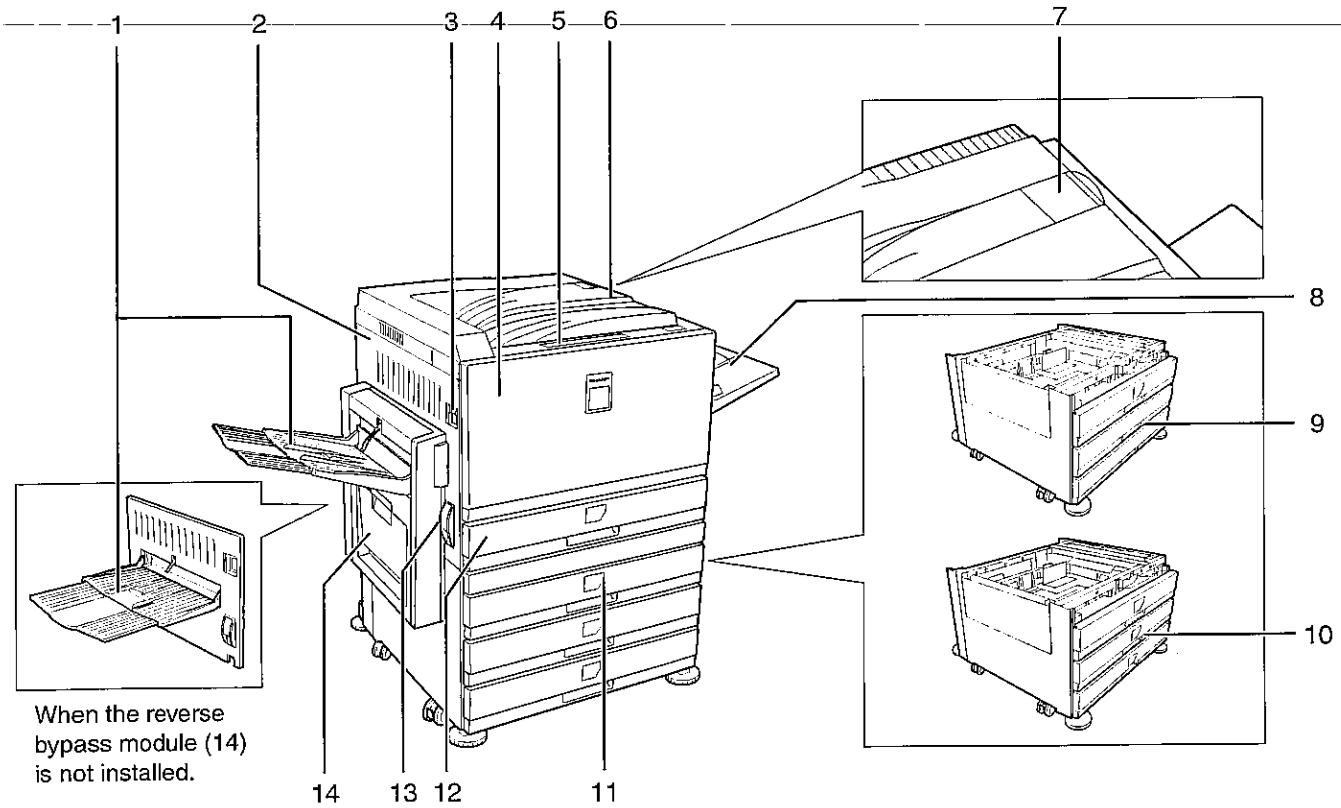
15. Necessary works before moving the machine

1) If the following options are installed, remove all of them from the machine.
   - Finisher
   - Reverse unit
   - Desk unit
2) Remove the following consumable parts from the machine.
   - Paper
   - Toner cartridge
   - Photoconductor cartridge
3) Lock the following sections.
   - Paper cassette lift plate

[6] EXTERNAL VIEW AND INTERNAL STRUCTURE

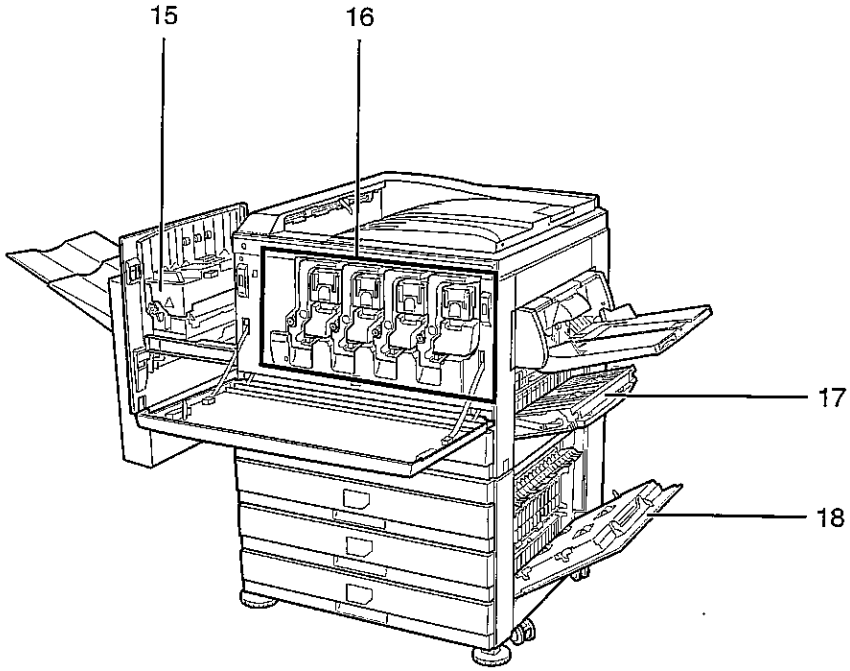
1. Name and function of each section

A. External view



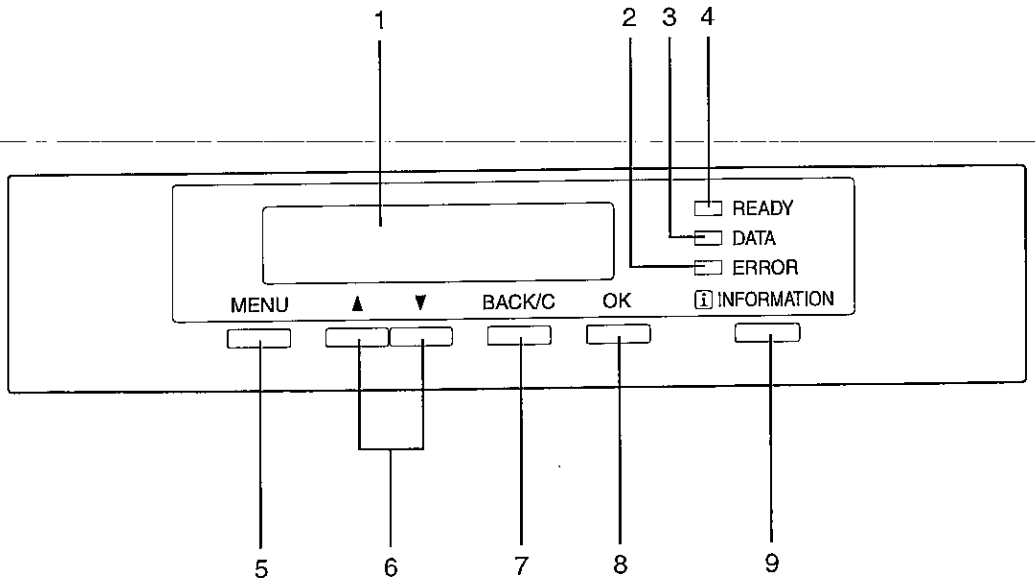
No.	Parts		Note
	Name	Function	
1	Paper exit tray (Left tray)	Receives discharged paper.	
2	Left side cover	Opened to process a paper jam in the fusing unit or the transfer unit.	
3	Main switch	Turns on/off the power source.	
4	Front cover	Opened to replace the toner cartridge.	
5	Operation panel	Performs various functions with the operation keys and the touch panel.	
6	Upper paper exit tray (Center tray)	Receives discharged paper.	
7	Paper stopper	To prevent output paper from falling.	
8	Manual feed tray	Used for manual paper feed.	
9	1-stage paper feed desk	Provided with the 1-stage trays for paper feed. Each tray holds about 500 sheets of the recommended color paper (80g/m² (21 lbs.)) or about 550 sheets of Sharp standard paper (64g/m² (17 lbs.)). (Option)	
10	3-stage paper feed desk	Provided with the 3-stage trays for paper feed. Each tray holds about 500 sheets of the recommended color paper (80g/m² (21 lbs.)) or about 550 sheets of Sharp standard paper (64g/m² (17 lbs.)). (Option)	
11	2-stage duplex paper feed desk	Provided with the 2-stage duplex paper feed trays. Each tray holds about 500 sheets of the recommended color paper (80g/m² (21 lbs.)) or about 550 sheets of Sharp standard paper (64g/m² (17 lbs.)). For duplex paper exit, the reverse bypass module (AR-RB1) (15) is required. (Option)	
12	Tray	Holds about 500 sheets of the recommended color paper (80g/m² (21 lbs.)) or about 550 sheets of Sharp standard paper (64g/m² (17 lbs.)).	
13	Left side cover open/close knob	Push up this knob to open the left cover.	
14	Reverse bypass module	Reverses paper for automatic duplex paper exit. (Option)	

B. Internal structure



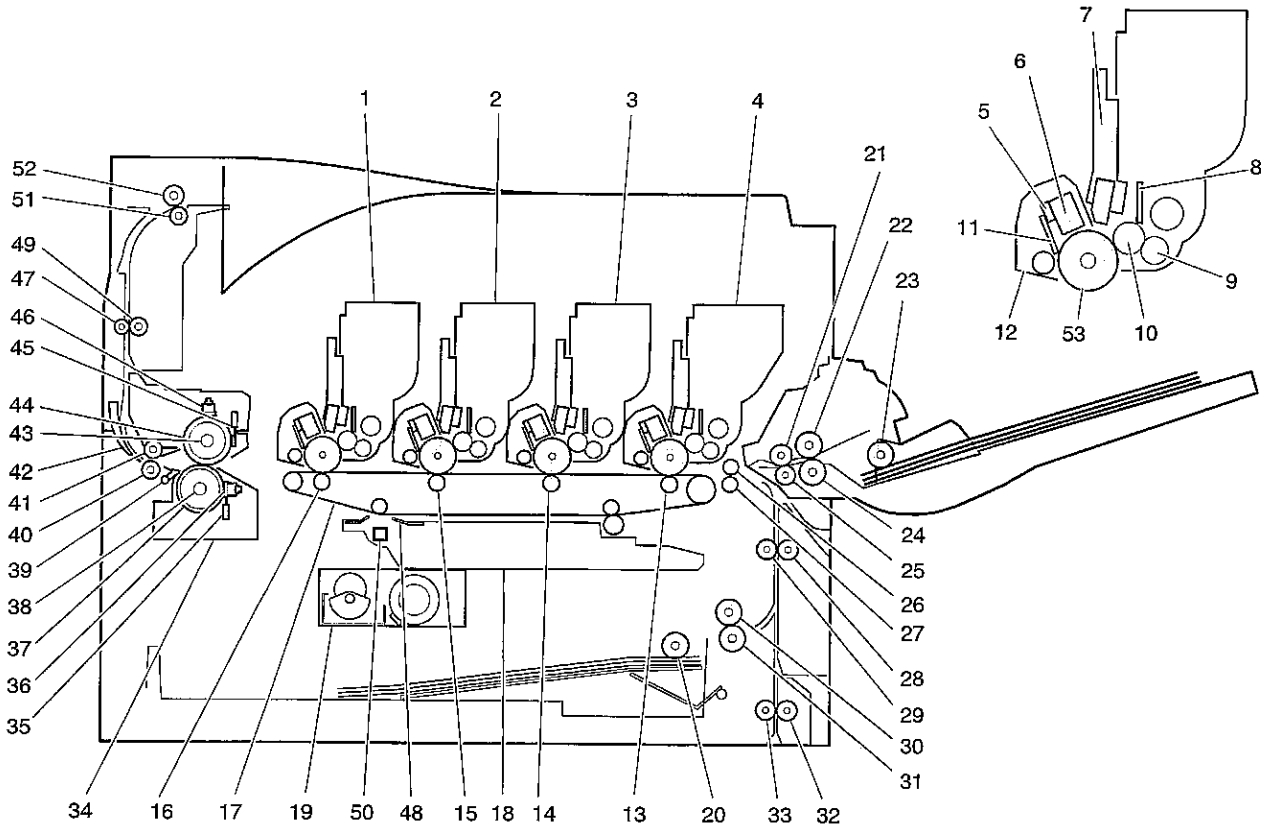
No.	Parts		Note
	Name	Function	
15	Fusing section	Fuses transferred images on paper.	Note: Since the fusing section is heated to a high temperature, be careful not to burn your hands when processing a paper jam.
16	Toner cartridges	Toner is in this cartridge. When toner is empty, replace the empty cartridge with a new one.	
17	Right side cover	Opened to process a paper jam in the paper feed section.	
18	Paper feed desk right cover	Opened to process a paper jam in a peripheral unit.	

C. Operation panel



No.	Parts		Note
	Name	Function	
1	Message display	Displays the current status of the printer. [i] displayed in any message indicates that the [INFORMATION] key should be pressed.	
2	[ERROR] indicator	Lights up when paper or toner must be added or when a misfeed has occurred in the machine. Blinks when an abnormal condition has occurred in the machine.	
3	[DATA] indicator	Lights up or blinks when print data is being received or output. Also lights up when job data is stored by the job retention function.	
4	[READY] indicator	Print data can be received when this indicator is lit.	
5	[MENU] key	Press to select a menu group such as the operation conditions, custom settings, or execution of print jobs held by the retention function. This key can also be pressed to return to the job status screen from each of the menu groups. See the next page for the detail of menu group.	
6	[▲/▼] keys	Press to scroll through settings or selections for settings.	
7	[BACK/C] key	Use this key to return to the previous setting level, or to cancel the currently selected job.	
8	[OK] key	Press to select a setting or function, or to store a setting.	
9	[INFORMATION] key	When [i] is displayed with a message indicating a paper misfeed, the procedure to follow can be displayed by pressing the [INFORMATION] key. If the [INFORMATION] key or the [BACK/C] key is pressed while the procedure is displayed, the information mode will be canceled. If you hold down this key in standby or during printing, the total number of printed pages will be displayed.	

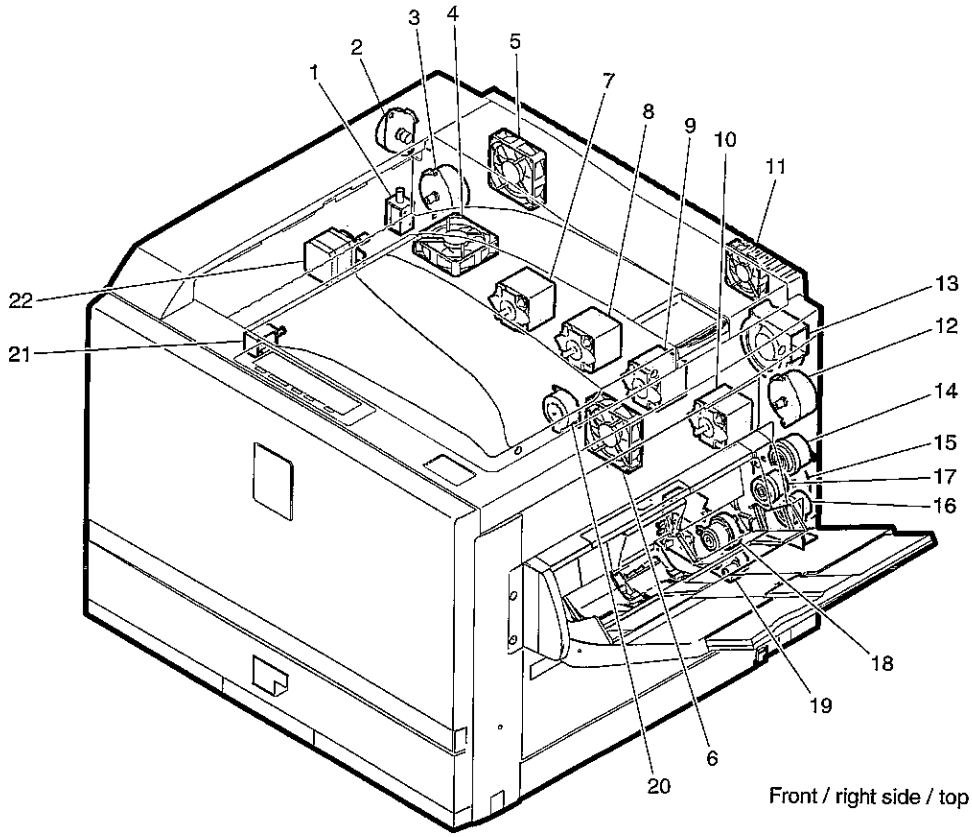
D. Cross section



No.	Parts		Note
	Name	Function	
1	Yellow toner cartridge	Attaches yellow toner to electrostatic latent images on the photoconductor.	
2	Magenta toner cartridge	Attaches magenta toner to electrostatic latent images on the photoconductor.	
3	Cyan toner cartridge	Attaches cyan toner to electrostatic latent images on the photoconductor.	
4	Black toner cartridge	Attaches black toner to electrostatic latent images on the photoconductor.	
5	Discharge lamp	Discharges the photoconductor.	
6	Main charger unit	Charges the magenta photoconductor negatively.	
7	LED unit	Converts the color component image signal sent from the ICU PWB into LED light, and radiate it to the OPC drum.	
8	Doctor blade	Regulates the toner quantity on the developing roller.	
9	Supply roller	Supplies toner to the developing roller.	
10	Developing roller	Attaches toner to the photoconductor.	
11	Cleaning blade	Cleans residual toner from the photoconductor.	
12	OPC drum unit	Forms electro-static latent images.	
13	Transfer roller (K)	Applies the transfer voltage to the transfer belt.	
14	Transfer roller (C)	Applies the transfer voltage to the transfer belt.	
15	Transfer roller (M)	Applies the transfer voltage to the transfer belt.	
16	Transfer roller (Y)	Applies the transfer voltage to the transfer belt.	
17	Transfer belt	Transfers toner images of the photoconductor onto paper.	
18	Waste toner box (Transfer section)	Collects waste toner on the transfer belt.	
19	Lift-up unit	Lifts the transfer belt.	
20	Paper pickup roller (No. 1 tray)	Sends paper to the paper feed roller.	
21	Idle roller	Applies a pressure to paper and the transport roller to provide transport power of the transport roller to paper.	
22	Manual paper feed roller	Feed paper to the paper transport section.	
23	Paper pickup roller	Sends paper to the paper feed roller.	Manual paper feed section
24	Separation roller	Separates paper to prevent double feed.	

No.	Parts		Note
	Name	Function	
25	Manual paper transport roller	Transports paper to the resist roller.	
26	Upper resist roller	Transports paper to the transfer section.	
27	Lower resist roller	Transports paper to the transfer section.	
28	Idle roller	Prevents paper skew.	
29	Paper transport roller 1	Transports paper to the resist roller.	
30	Paper feed roller (No. 1 tray)	Feed paper to the paper transport section.	
31	Separation roller (No. 1 tray)	Separates paper to prevent double feed.	
32	Idle roller	Applies a pressure to paper and the transport roller to provide transport power of the transport roller to paper.	
33	Paper transport roller 2	Transports paper to the transport roller 1.	
34	Fusing unit	Fuses toner on paper.	
35	Lower heat roller thermistor	Detects the temperature on the fuser roller surface.	
36	Lower heat roller thermostat	Detects an abnormally high temperature and turns off the heater lamp.	
37	Lower heat roller	Heats and presses toner on paper to fuse toner on paper.	
38	Lower heater lamp	Heats the lower fuser roller.	
39	Lower separation pawl	Mechanically separates paper which was not separated naturally from the lower heat roller.	
40	Fusing transport roller	Transports paper after fusing.	
41	Idle roller	Applies a pressure to paper and the transport roller to provide transport power of the transport roller to paper.	
42	Gate	Switches the paper exit path. (face up, face down)	
43	Upper heater lamp	Heats the heat roller.	
44	Upper heat roller	Heats and presses toner on paper to fuse toner on paper.	
45	Upper heat roller thermistor	Detects the temperature on the heat roller surface.	
46	Upper heat roller thermostat	Detects an abnormally high temperature and turns off the heater lamp.	
47	Idle roller	Applies a pressure to paper and the transport roller to provide transport power of the transport roller to paper.	
48	Transfer belt cleaning blade	Cleans toner on the transfer belt.	
49	Paper transport roller 3	Transport paper to the paper exit roller.	
50	Belt waste toner transport shaft	Transports waste toner on the transfer belt to the waste toner box.	
51	Paper exit roller	Discharges paper to outside of the machine.	
52	Idle roller	Applies a pressure to paper and the transport roller to provide transport power of the transport roller to paper.	
53	OPC drum	Forms latent static electrostatic images with LED light.	

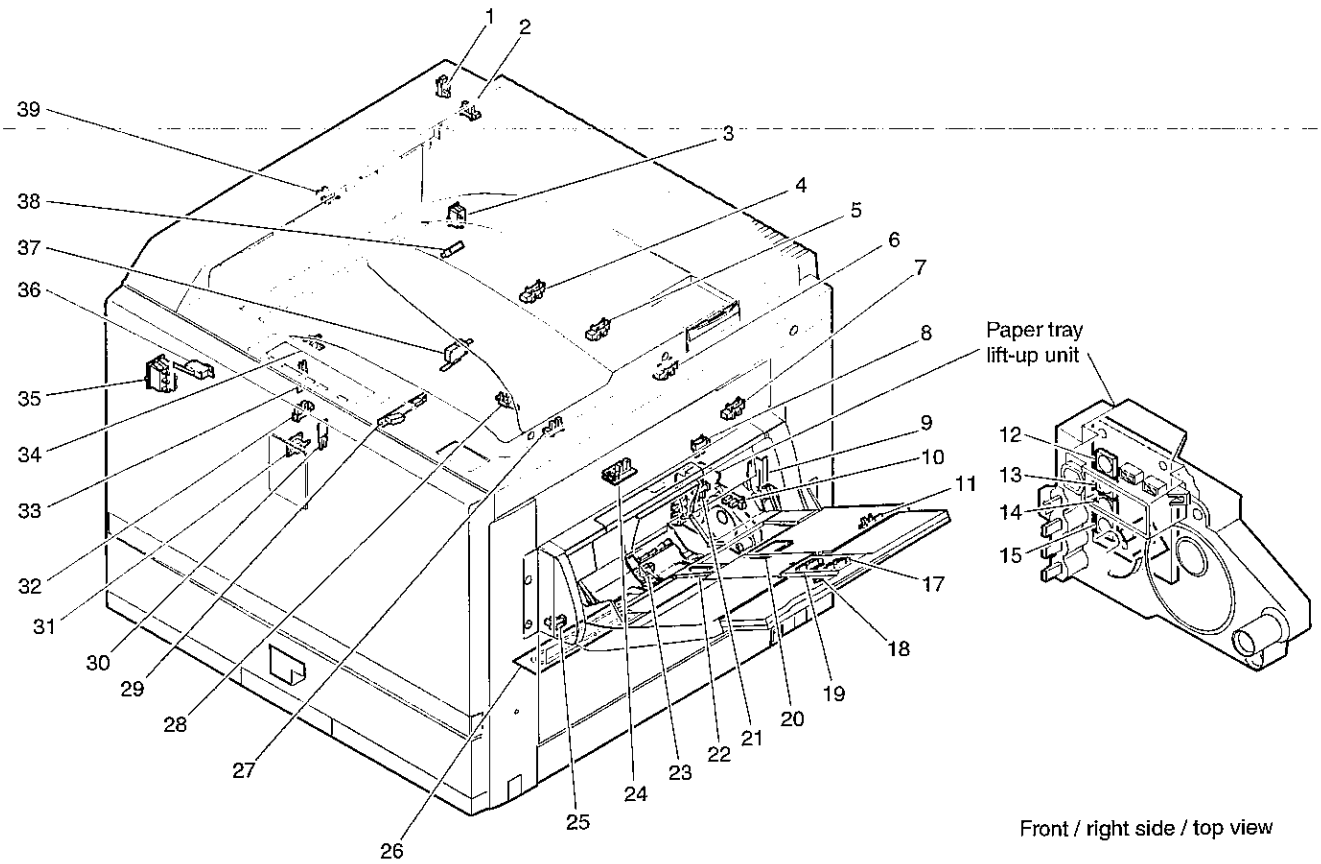
E. Motors, clutches, solenoids and fans



Front / right side / top view

No.	Parts		Code, signal name	Type
	Name	Function		
1	Exit select gate solenoid	Drives the exit path select gate.	GSS	Electromagnetic solenoid
2	Offset motor (Slide motor)	Drives the paper exit offset.	OSM	Stepping motor
3	Fusing drive motor	Drives the fusing unit.	FUSM	Stepping motor
4	Exhaust fan motor 1	Exhaust and cools the fusing section.	VFMP	DC motor
5	Exhaust fan motor 2	Exhaust and cools the fusing section.	VFMS	DC motor
6	Power unit cooling fan motor	Cools the power unit.	PSFM	DC motor
7	Drum motor (Y)	Drives the yellow photoconductor unit.	DM_Y	Stepping motor
8	Drum motor (M)	Drives the magenta photoconductor unit.	DM_M	Stepping motor
9	Drum motor (C)	Drives the cyan photoconductor unit.	DM_C	Stepping motor
10	Drum motor (K)	Drives the black photoconductor unit.	DM_K	Stepping motor
11	Printer controller cooling fan motor	Cools the printer controller.		
12	PS motor	Drives and turns ON/OFF the resist roller.	PSM	Stepping motor
13	Process cooling fan motor	Exhaust and cools the process section.	PCFM	DC motor
14	PS front clutch	Transmits power of the paper feed motor to the manual paper feed unit. (Controls ON/OFF.)	MTRC	Electromagnetic clutch
15	Paper feed motor	Drives the paper feed section and the paper transport section.	PFM	DC servo motor
16	Paper feed clutch	Transmits power of the paper feed motor to each transport roller. (Controls ON/OFF.)	TRC	Electromagnetic clutch
17	Manual paper feed clutch	Controls ON/OFF of the manual paper feed roller. Presses the paper pickup roller to paper.	MPFC	Electromagnetic clutch
18	Paper feed drive clutch	Controls ON/OFF of the paper feed roller.	CPFC1	Electromagnetic clutch
19	No. 1 cassette lift-up motor	Drives the lift plate.	LUM1	Synchronous motor
20	Belt lift-up motor	Lifts the transfer belt unit.	BLUM	Stepping motor
21	Calibration plate open/ close solenoid	Switches the image density sensor.	CALS	Electromagnetic solenoid
22	Transfer belt motor	Drives the transfer belt.	BTM	Stepping motor

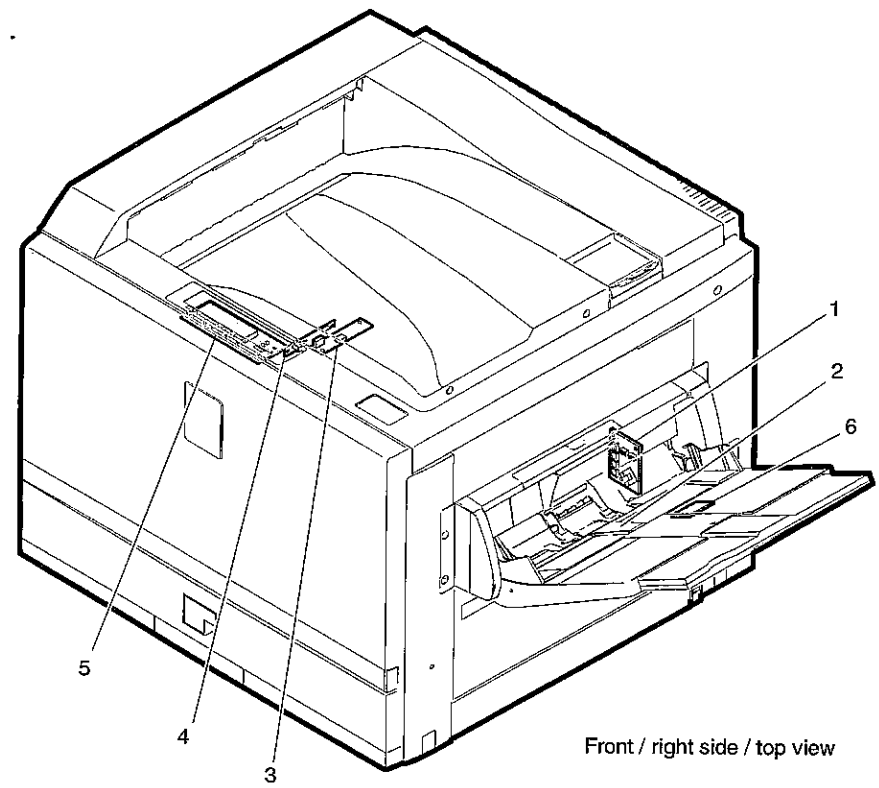
F. Sensors, switches and hearters



No.	Parts		Code, signal name	Type
	Name	Function		
1	Offset home position sensor	Detects the offset home position.	HPOS	Photo sensor (Photo transmission)
2	Paper exit tray full detection	Detects full of the face down paper exit tray.	TFD2	Photo sensor (Photo transmission)
3	Dehumidifier heater switch	Turns ON/OFF the dehumidifier heater installed in the scanner (reading) section and the paper feed section.	DHSW (Japan only)	—
4	Toner empty sensor (Y)	Detects toner empty (Y).	TES_Y	Photo sensor (Photo transmission)
5	Toner empty sensor (M)	Detects toner empty (M).	TES_M	Photo sensor (Photo transmission)
6	Toner empty sensor (C)	Detects toner empty (C).	TES_C	Photo sensor (Photo transmission)
7	Toner empty sensor (K)	Detects toner empty (K).	TES_K	Photo sensor (Photo transmission)
8	No. 1 paper transport sensor	Detects paper in front of the resist roller.	PPD1	Photo sensor (Photo transmission)
9	Paper feed door open detection	Detects open/close of the paper feed door.	DSWR	Micro switch
10	Manual feed paper empty detection	Detects paper empty on the paper tray.	MPED	Photo sensor (Photo transmission)
11	Manual feed tray pulling out detection 2	Detects the paper tray position.	MTOP2	Contact switch
12	No. 1 cassette paper size detection 1	Detects the paper size set by the paper size set blocks.	C1SS1	Contact switch
13	No. 1 cassette paper size detection 2	Detects the paper size set by the paper size set blocks.	C1SS2	Contact switch
14	No. 1 cassette paper size detection 3	Detects the paper size set by the paper size set blocks.	C1SS3	Contact switch
15	No. 1 cassette paper size detection 4	Detects the paper size set by the paper size set blocks.	C1SS4	Contact switch
17	Manual feed paper length detection 2	Detects the paper length.	MPLD2	Photo sensor (Photo transmission)
18	Manual feed tray pulling out detection 1	Detects the paper tray position.	MTOP1	Contact switch
19	Manual feed paper length detection 1	Detects the paper length.	MPLD1	Photo sensor (Photo transmission)
20	Humidity sensor	Detects the ambient humidity.	HUD	—
21	No. 1 cassette paper feed detection	Detects paper exit from No. 1 paper tray.	PFD1	Photo sensor (Photo transmission)
22	Manual feed paper width detection	Detects the paper width.	MPWS	Volume (Variable resistor)

No.	Parts		Code, signal name	Type
	Name	Function		
23	No. 1 cassette lift-up upper limit detection	Detects the upper limit position of paper.	LUD1	Photo sensor (Photo transmission)
24	PS front sensor	Detects paper in front of PS.	PPD2	Photo sensor (Photo transmission)
25	No. 1 cassette paper empty detection	Detects paper empty on the paper tray.	PED1	Photo sensor (Photo transmission)
26	Dehumidifier heater	Dehumidifier hater for the main body cassette. (Japan only)	DH	—
27	Belt lift-up upper limit detection	Detects lift-up or lift-down of the transfer belt.	BLUD	Photo sensor (Photo transmission)
28	Belt waste toner full detection	Detects belt waste toner full.	BTNF	Contact switch
29	Color toner concentration (process control) sensor/Auto image Reg.	Detects the toner patch density (color toner) in image density correction operation. 2-sensors on PWB.	PCS_C	Photo sensor (Photo transmission)
30	Lower heat roller thermistor	Detects the temperature on the heat roller surface.	THSD	Thermistor
31	Lower heat roller thermostat	Detects an abnormally high temperature and turns off the heater lamp.	HLTS2	Thermostat Thermal switch
32	Machine paper exit sensor 1	Detects discharged paper.	POD1	Photo sensor (Photo transmission)
33	Upper heat roller thermistor	Detects the temperature on the heat roller surface.	THSU	Thermistor
34	Upper heat roller thermostat	Detects an abnormally high temperature and turns off the heater lamp.	HLTS1	Thermostat Thermal switch
35	Main switch	Turns ON/OFF the main power.	MSW	Seesaw switch
36	Front door open detection	Detects open/close of the front door.	DSWF	Micro switch
37	Paper exit door open detection	Detects open/close of the paper exit door.	DSWL	Micro switch
38	Face-up paper exit tray full detection	Detects full of the face-up paper exit tray.	TFD	Photo sensor (Photo transmission)
39	Machine paper exit sensor 2	Detects discharged paper.	POD2	Photo sensor (Photo transmission)
40	Black toner concentration sensor	Detects black patch density for toner concentration	PCS_B	—

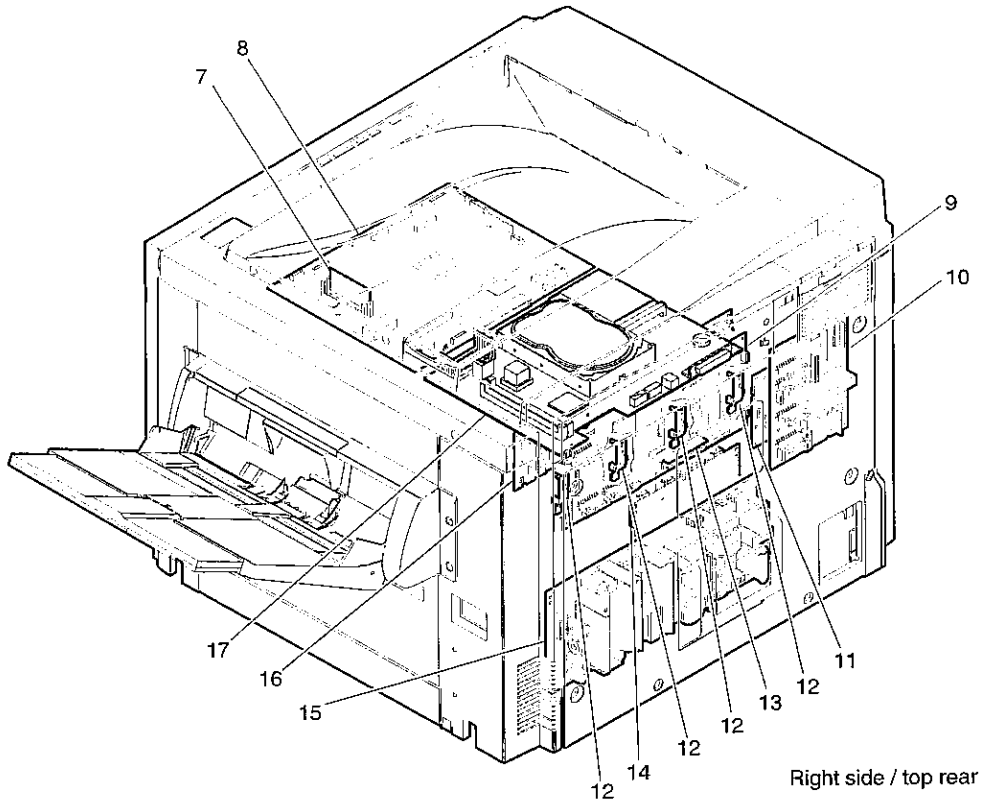
G. PWB 1



Front / right side / top view

No.	Parts		Code, signal name	Type
	Name	Function		
1	Lift-up unit PWB tray	Detects the cassette size and interfaces the cassette lift-up motor signals.		
2	Manual feed VR PWB	Outputs manual feed width signals.		
3	Process control PWB (for black)	Outputs the black toner density on the transfer belt.		
4	Process control PB (for color)	Outputs the color toner density on the transfer belt.		
5	Operation PWB	Outputs the key operation signal.		
6	Temp sensor PWB	Temp/humidity sensor readings.		

G. PWB2

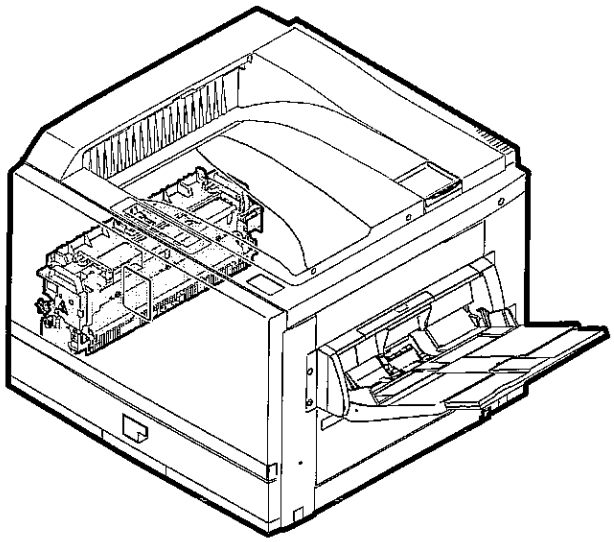


Right side / top rear / view

No.	Parts		Code, signal name	Type
	Name	Function		
7	Flash PWB (ICU)	Includes the program to drive the ICU PWB.		
8	ICU PWB	Performs image process and controls LED.		
9	PCU PWB	Controls the engine section.		
10	Driver PWB	Controls the DC load power and drive the motor.		
11	AC power PWB	Controls the power on the primary side.		
12	LED DL PWBs	Discharges electric charges on the OPC drums.		
13	Flash PWB (PCU)	Includes the program to drive the PCU PWB.		
14	High voltage TC PWB	Produces the transfer voltage.		
15	DC power PWB	Outputs the voltage on the secondary side, and controls the heater lamp.		
16	High voltage MC PWB	Produces a high voltage for the main charger and the developing bias voltage.		
17	PRTC	Printer control (with HDD, NIC)		

[7] DESCRIPTIONS OF EACH SECTION

1. Fusing section



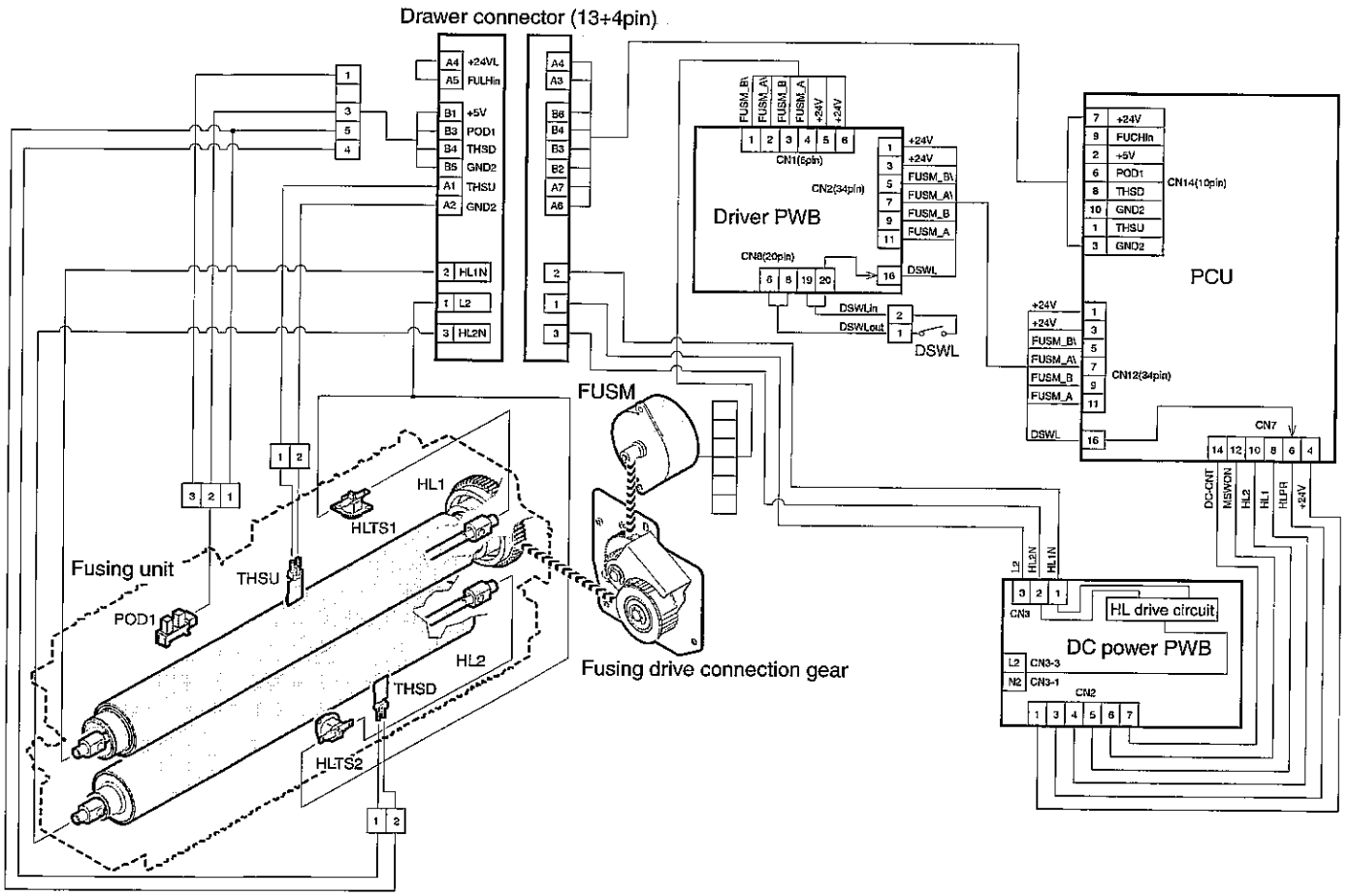
A. Operational descriptions

(1) Outline

This section performs the following function and operation.

1) Toner attached to paper in the transport section is fused onto paper by heat and pressure of the heat roller.

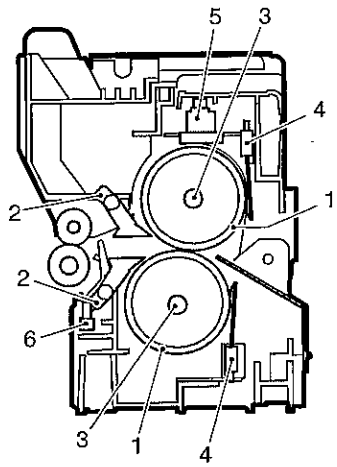
(2) Electrical section

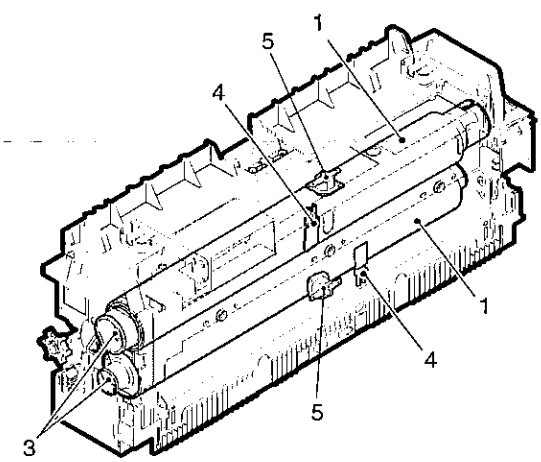


No.	Name	Code, Signal name	Function
RW	Fusing drive motor	FUSM_A, A', B, B'	Drives the fusing section.
RW	Control signal	FUCHin	Fusing unit installation detecting signal
RW	Control signal	DSWL	Left cabinet open/close detection signal
RW	Control signal	HLPR	Heater lamp power relay (in the DC power PWB) drive signal

RW: Abbreviation of Related Wiring, which means the said load is specified in the related figure of the mechanical and the electrical sections.

(3) Major parts/signals functions and operations





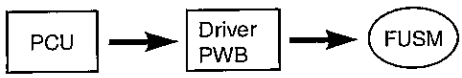
No.	Name	Code, Signal name	Function
1	Heat roller	—	Heats and presses toner to fuse it on paper. Silicon rubber rollers are used as the upper and the lower heat rollers. Teflon tube is wound around the upper heat roller.
2	Upper/lower separation pawls	—	Mechanically separate paper from the heat roller, which was not separated naturally.
3	Heater lamp	Upper: HL1, Lower: HL2	Heats the heat rollers.
4	Thermistor	Upper: THSU, Lower: THSD	Detects the surface temperature of the heat roller. (Keeps the roller surface temperature at a constant level.)
5	Thermostat	Upper: HLTS1, Lower: HLTS2	Cuts conduction of the heater lamp when an abnormally high temperature is detected.
6	Paper exit sensor	POD1	Detects paper discharged from the fusing section.

(4) Operational descriptions

a. Fusing unit drive

To drive the fusing unit, drive power is transmitted from the drive motor (FUSM) through the connection gear to the upper heat roller gear.

The drive motor (stepping motor) is driven by the motor drive IC in the driver PWB according to the control signal sent from the PCU.



b. Heater lamp drive

The surface temperature detected by the thermistor is sent to the PCU. When the temperature is lower than the specified level, the PCU sends the heater lamp lighting signal to the heater lamp drive circuit in the DC power PWB.

The triac in the heater lamp drive circuit is turned on to apply AC power to the heater lamp, which turns on to heat the heat rollers.

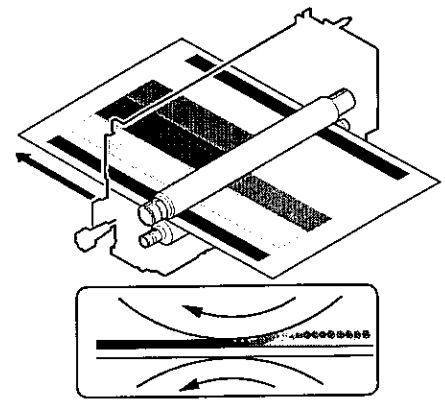
The thermostats are provided as a safety measure to prevent against an abnormally high temperature of the heat rollers.

When the thermostat is opened, the power supply (AC neutral) to the heater lamp is cut off.

c. Fusing operation

Color toner of YMCK on paper is heated and pressed by the heat rollers to be fused on paper.

At that time, color toner of YMCK is mixed to reproduce nearly actual colors of document images.



The upper and the lower heat rollers are provided to heat from above and below. This is because it is necessary to heat four layers of toner from above and below and right and left to fuse it on paper.

The upper and lower heat rollers are of silicon rubber. This is because of the following reasons:

1) To provide a greater nip quantity and a higher heating capacity for paper.
2) The soft, flexible rollers press multi-layer toner without deformation to fuse on paper.
3) An even pressure is applied to an uneven surface of multi-layer toner.

d. Fusing temperature control

The temperature sensor is provided at the center of the upper and the lower heat rollers.

The temperature sensor at the center detects the heat roller temperature and controls the heater lamp to keep the fusing temperature at the specified level.

The fusing temperature is switched according to the machine condition and paper type selected.

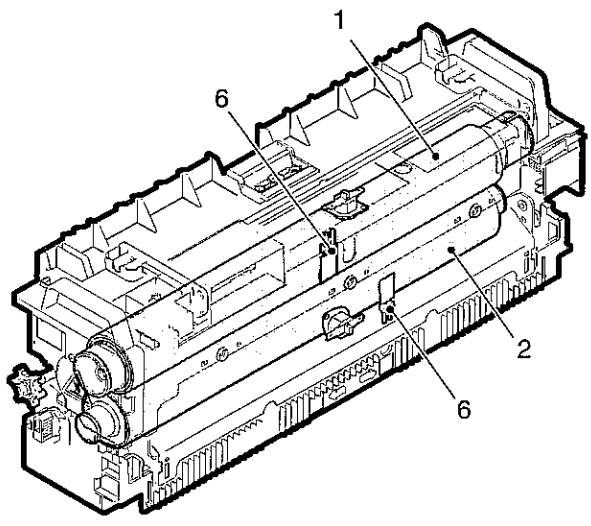
	Upper heat roller		Lower heat roller
Ready state	170°C		120°C
Power save mode	143°C		OFF
Print mode	Normal paper	175°C	140°C
	OHP sheet	170°C	155°C
	Heavy paper 1	175°C	136°C
	Heavy paper 2	175°C	145°C
	Envelope	180°C	145°C

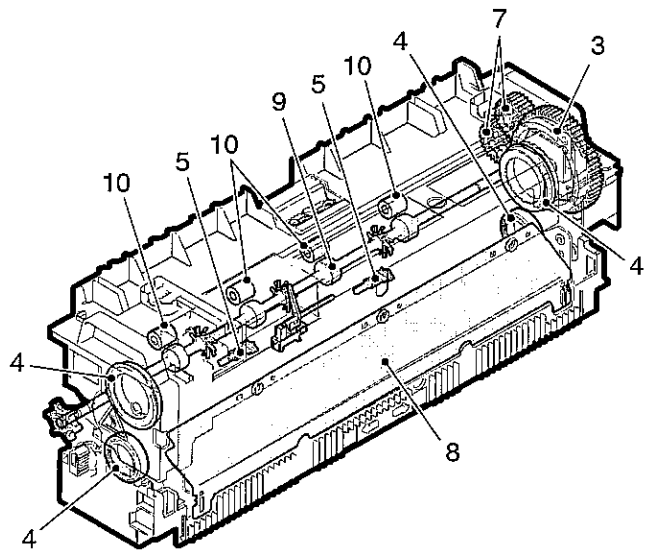
B. Disassembly/Assembly/Maintenance

(1) Fusing section maintenance target parts

×: Check (Clean, replace, or adjust as necessary.) ○: Clean ▲: Replace △: Adjust ☆: Lubricate ❑: Shift position

Unit name	No.	Part name	When calling	50K	100K	150K	200K	250K	300K	350K	400K	Remark
Fusing section	1	Upper heat roller	×	×	▲	×	▲	×	▲	×	▲	Replace at 100K or within 2 years.
	2	Lower heat roller	×	×	▲	×	▲	×	▲	×	▲	Replace at 100K or within 2 years.
	3	Heat roller gear	×	×	▲	×	▲	×	▲	×	▲	
	4	Heat roller bearing	×	×	▲	×	▲	×	▲	×	▲	
	5	Separation pawl	×	×	▲	×	▲	×	▲	×	▲	
	6	Thermistor	×	×	▲	×	▲	×	▲	×	▲	
	—	Bearings	×	×	×	×	×	×	×	×	×	
	7	Gears	×	☆	☆	☆	☆	☆	☆	☆	☆	
	8	Paper guides	○	○	○	○	○	○	○	○	○	
	9	Paper exit roller (Lower)	×	×	×	×	×	×	×	×	×	
	—	Fusing unit		×	▲	×	▲	×	▲	×	▲	Replace the unit at 100K or within 2 years.
	10	Paper exit roller (Upper)	×	×	×	×	×	×	×	×	×	

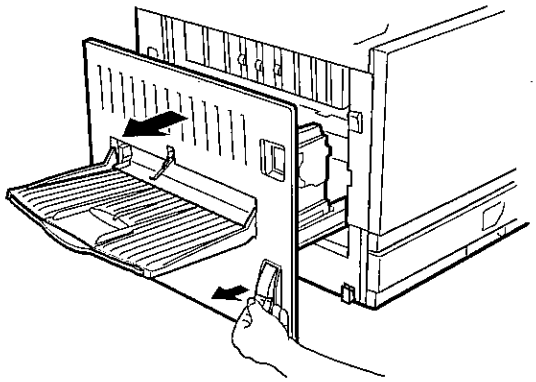




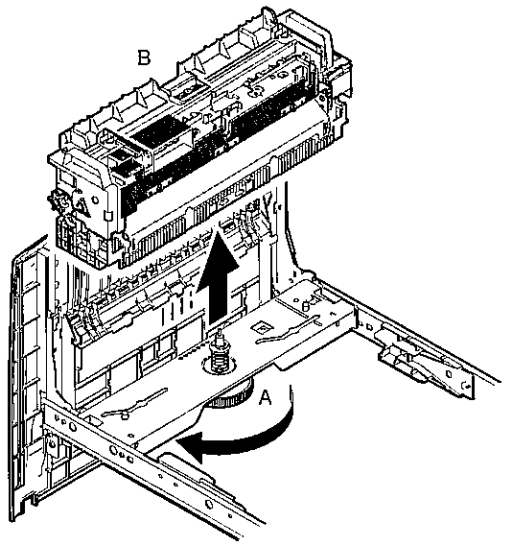
(2) Maintenance parts replacement procedure

a. Fusing unit removal

1) Open the left cabinet.

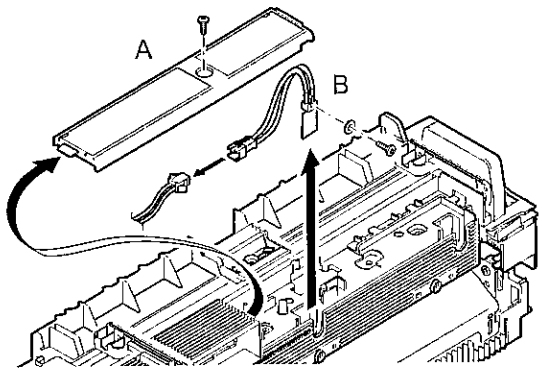


2) Loosen the roller knob (A) and remove the fusing unit (B).



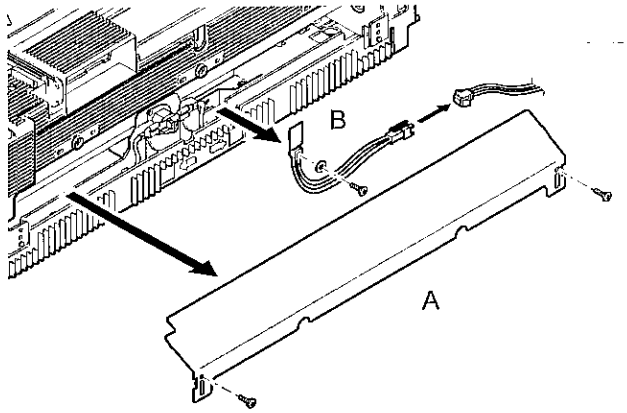
b. Upper thermistor

1) Remove the fusing until from the machine.
2) Remove the screw and the harness cover (A).
3) Remove the connector, the screw, and the harness, and remove the thermistor (B).



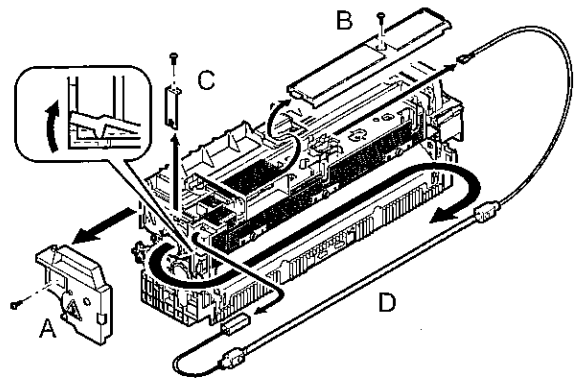
c. Lower thermistor

1) Remove the fusing unit from the machine.
2) Remove the screws, and remove the fusing front PG (A).
3) Remove the connector, the screw, and the harness, and remove the thermistor (B).



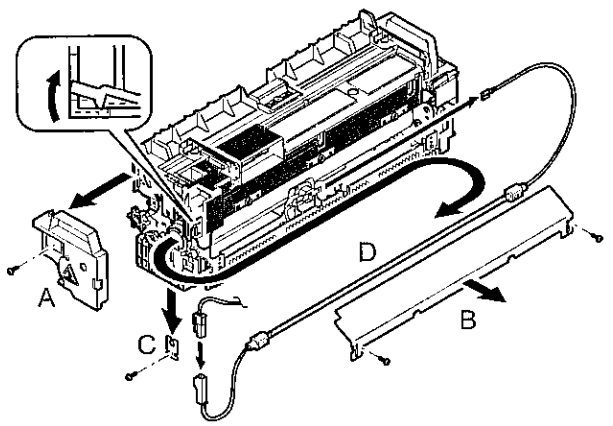
d. Upper heater lamp

1) Remove the fusing unit from the machine.
2) Remove the screw and remove the fusing front cover (A). Remove the harness cover (B).
3) Remove the connector, the screw, and the lamp holder (C), and remove the upper heater lamp.



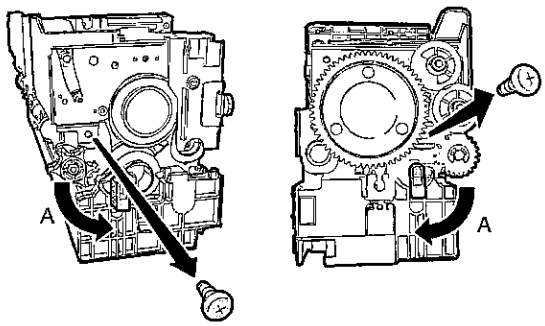
e. Lower heater lamp

1) Remove the fusing unit from the machine.
2) Remove the screw, and remove the fusing front cover (A).
3) Remove the screw, and remove the fusing front PG (B).
4) Remove the connector, the screw, and the lamp holder (C), and remove the lower heater lamp.

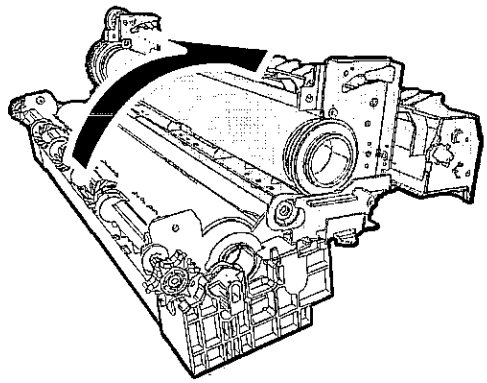


f. Upper heat roller, bearing, gear

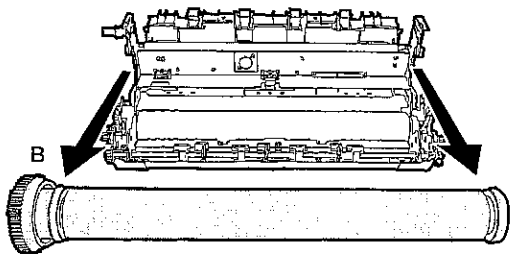
1) Remove the fusing unit from the machine.
2) Remove the lever (A), and release the roller pressure.
3) Remove the screw.



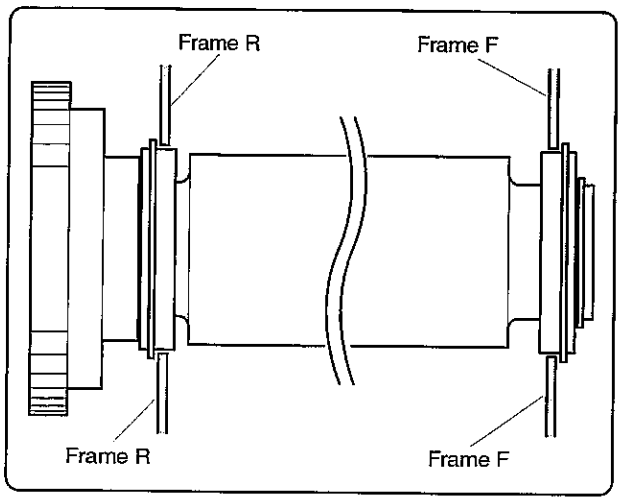
4) Open the upper fusing section.



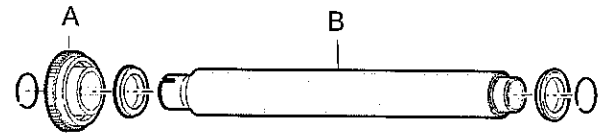
5) Remove the heat roller upper unit (B).



* When assembling, put the flanges of the upper bearings outside of the frames F and R.

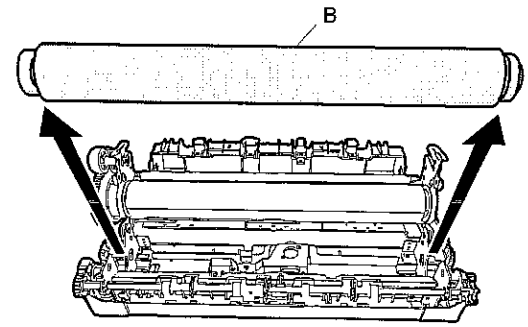


6) Remove the C-ring and the bearing, and remove the gear (A) and the heat roller (B).

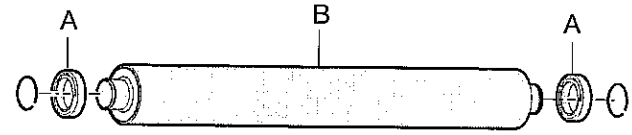


g. Lower heat roller, bearing

1) Remove the fusing unit from the machine.
2) Remove the screw, and open the upper fusing section.
3) Remove the lower heat roller unit (B).

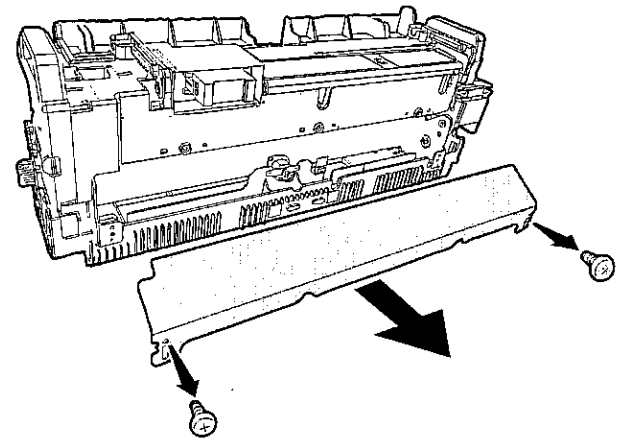


4) Remove the C-ring and the bearing (A), and remove the heat roller (B).



h. Paper guide

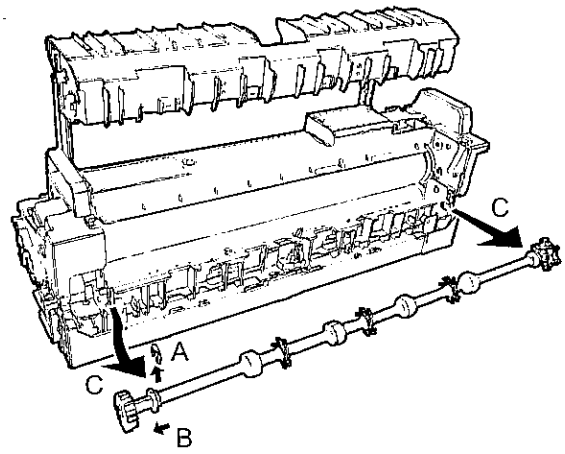
1) Remove the fusing unit from the machine.
2) Remove the screw, and remove the paper guide.



Note: Refer to the adjustment (ADJ13) when installing the paper guide.

i. Paper exit roller

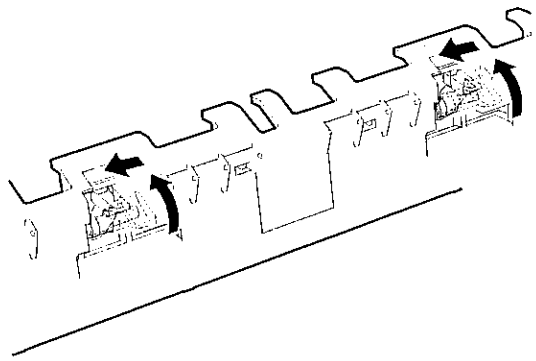
1) Remove the fusing unit from the machine.
2) Open the upper fusing section.
3) Remove the E-ring (A), and shift the bearing (B).
4) Remove the paper exit roller unit (C).



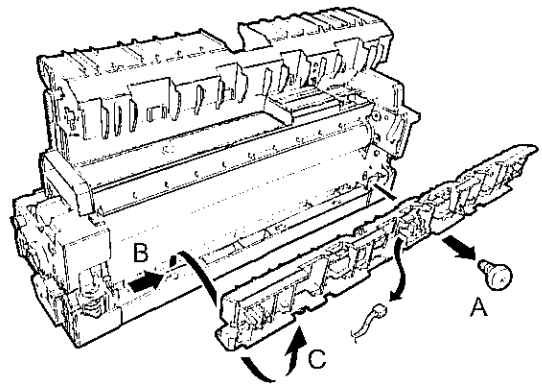
5) Remove the E-ring, the gear, the pin, and the bearing.

j. Lower separation pawl

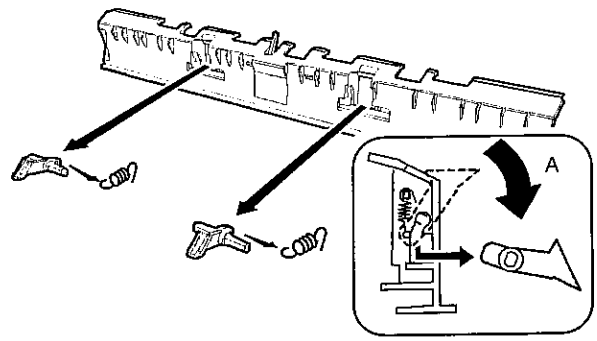
1) Remove the fusing unit from the machine.
2) Open the upper fusing section.
3) Remove the paper exit roller unit.
4) Lift the separation pawl and shift it to the right and lift it from the heat roller.



5) Remove the POD1 connector.
6) Remove the screw, and slide and remove the lower separation pawl mounting plate.

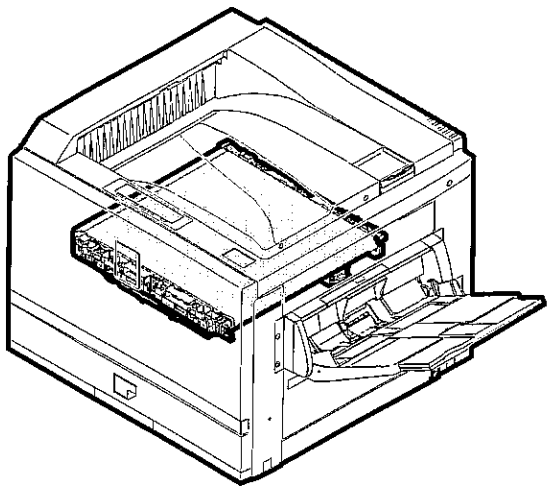


7) Rotate the separation pawl in direction A and remove if from the mounting plate. Remove the spring.



Note: When attaching the separation pawl, check that the separation pawl is in contact with the heat roller.

2. Transfer section



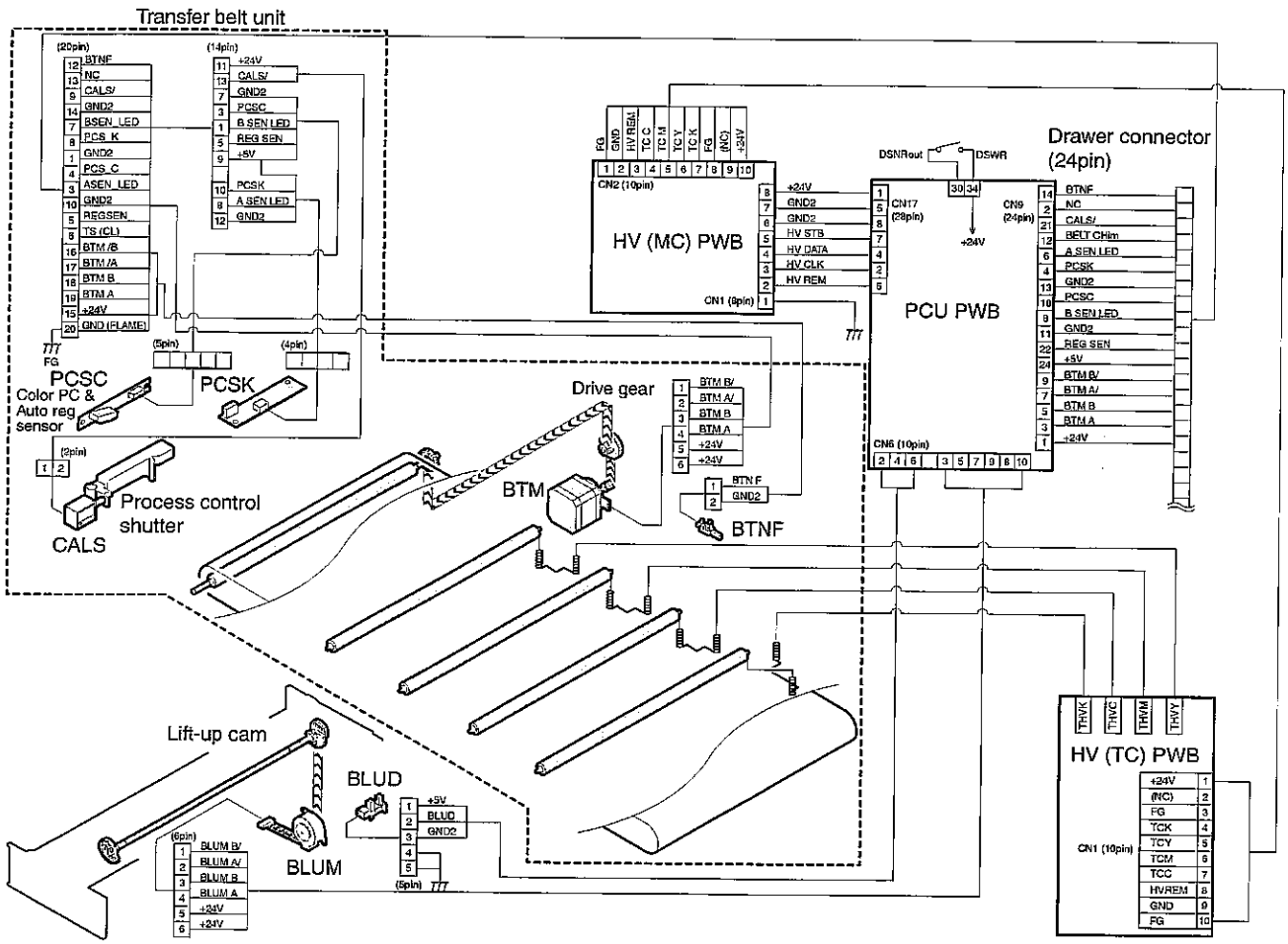
A. Operational descriptions

(1) Outline

This section functions and operates as follows:

1) A high, positive voltage is applied to the transfer roller to charge the transfer belt and paper on it positively, attracting negatively charged toner images on the OPC drum onto paper.

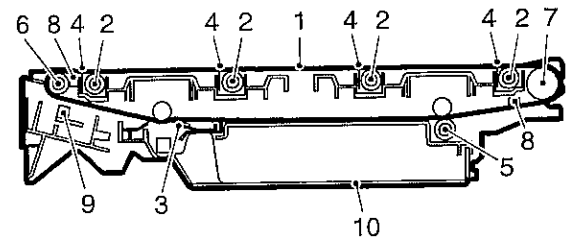
(2) Electrical and mechanical sections

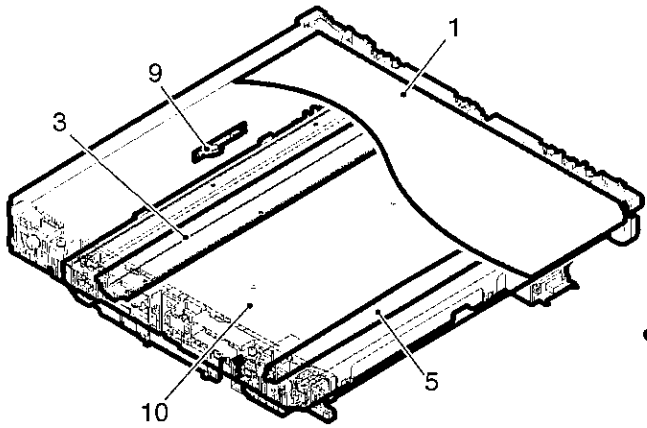


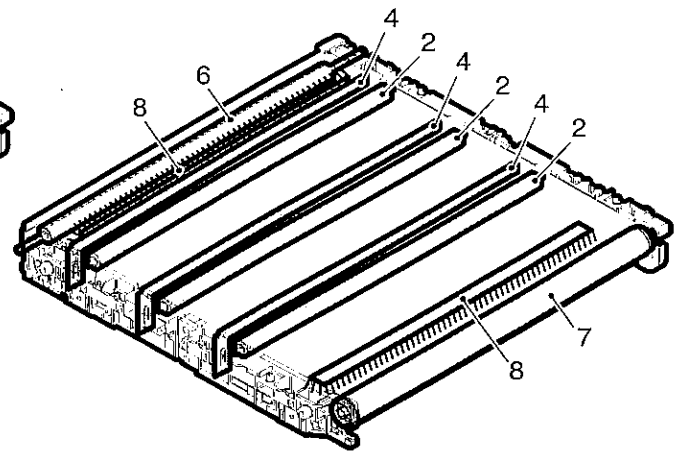
No.	Name	Code, signal name	Function
RW	Belt motor	BTM	Drives the transfer belt.
RW	Calibration solenoid	CALS	Drives the shutter on the process control sensor.
RW	Waste toner full detection switch	BTNF	Detects waste toner full in the waste toner box.
RW	Belt lift-up motor	BLUM	Lifts up the transfer belt unit.
RW	Belt lift-up sensor	BLUD	Detects the position of the transfer belt unit.
RW	Control signal	TC (K, C, M, Y)	Each color transfer high voltage control signal
RW	Control signal	THV (K, C, M, Y)	Each color transfer high voltage

RW: Abbreviation of Related Wiring, which means the said load is specified in the related figure of the mechanical and the electrical sections.

(3) Major parts/signals functions and operations







No.	Name	Code, signal name	Function
1	Transfer belt	—	Transfers toner images on the OPC drum onto paper.
2	Transfer roller	—	Applies a transfer voltage to the transfer belt.
3	Belt cleaning blade	—	Cleans and removes toner from the transfer belt.
4	Transfer discharge sheet	—	Discharges the transfer belt.
5	Transfer belt cleaning roller	—	Removes paper dust from the transfer belt.
6	Transfer belt drive roller	—	Drives the transfer belt.
7	Transfer belt follower roller	—	Transfer drive follower roller
8	Transfer belt cleaning brush	—	Cleans the back surface of the transfer belt.
9	Process control sensor	Monochrome: PCSK Color: PCSC	Detects the toner patch density in image density correction.
10	Transfer waste toner tank	—	Collects waste toner on the transfer belt.

(4) Operational descriptions

a. Transfer belt drive

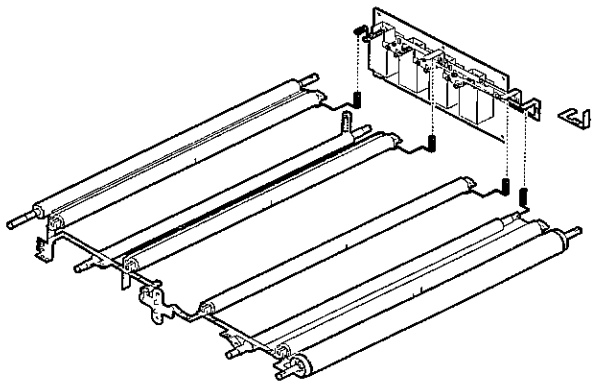
The transfer belt drive power is transmitted from the drive motor (BTM) to the transfer drive roller.

The motor (stepping motor) is driven by the drive signal sent from the PCU.

b. Applying a transfer high voltage to the transfer roller

According to the high voltage control signal from the PCU, the signal is converted into a transfer high voltage control signal with the HV (MC) PWB, and sent to the HV (TC) PWB.

According to each color transfer high voltage control signal, a high voltage is applied to each transfer roller from the transfer high voltage HV (TC) PWB through the connection spring to each transfer roller.



c. Process control sensor control

The process control shutter is provided on the process control sensor of monochrome (PCSK) and color (PCSC). When the shutter is open (in image density correction and automatic registration), the toner patch formed on the transfer belt is read by the process control sensor, and its information is sent to the PCU.

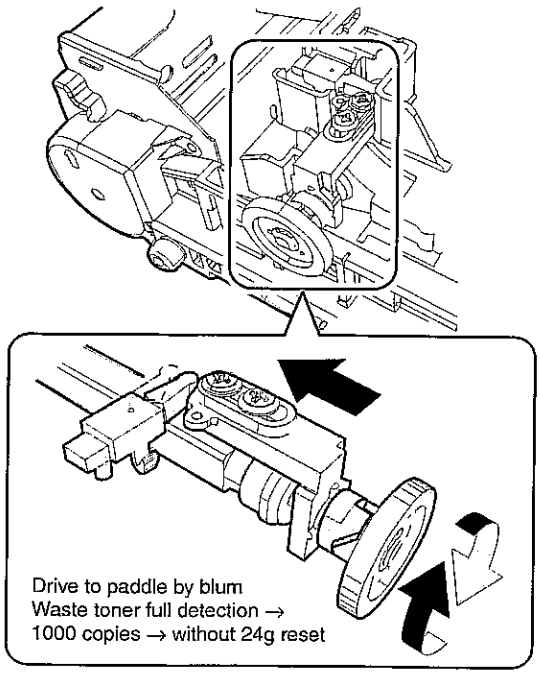
When the shutter is closed, the calibration sheet is read to perform calibration of the sensor itself.

The shutter operation is controlled by the calibration solenoid (CALS).

d. Belt waste toner full detection

Toner scraped by the belt cleaning blade is transported to the waste toner box by the belt waste toner transport shaft.

When the waste toner box is full, the rotation load of the waste toner transport shaft increases to turn on the waste toner full detection switch with the lever by the torque limiter function.



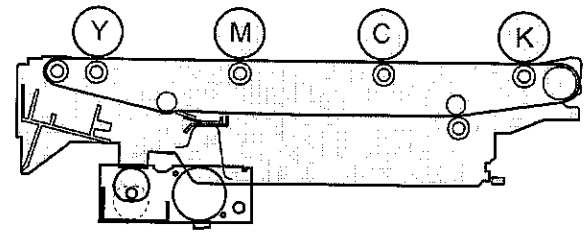
e. Transfer belt unit up and down

In color print, the transfer belt is in contact with four OPC drums. In black and white print, the transfer belt unit moves down so that only the black OPC drum is in contact with the transfer belt.

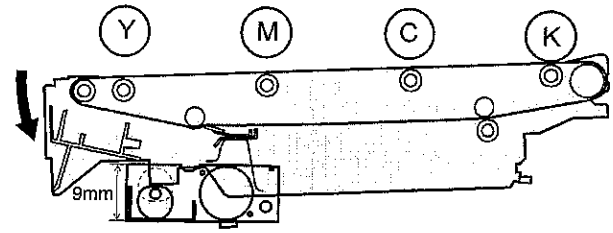
This up-and-down movement of the transfer belt is performed by the lift-up motor (BLUM), the lift-up cam, and the unit position sensor (BLUD).

When the left cabinet is opened for jam process, the rotating mechanism of the lift-up unit separates all four OPC drums from the transfer belt.

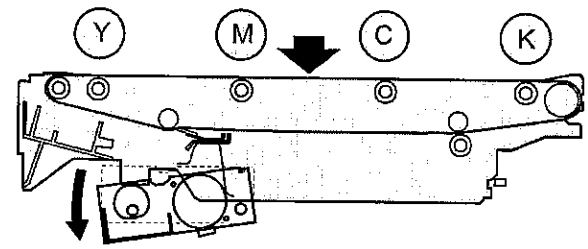
- Transfer belt position for color print
  The four OPC drums are in contact with the transfer belt by rotation of the cam in the transfer lift-up unit.



- Transfer belt position for black print
  Only the black OPC drum is in contact with the transfer belt by rotation of the cam in the transfer lift-up unit.



- Transfer belt position in jam process or replacement of the transfer belt
  When the left cabinet is opened, the transfer lift-up unit moves down, and the transfer unit moves by 9mm accordingly.

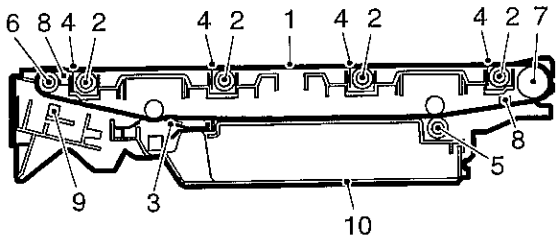


B. Disassembly/assembly/maintenance

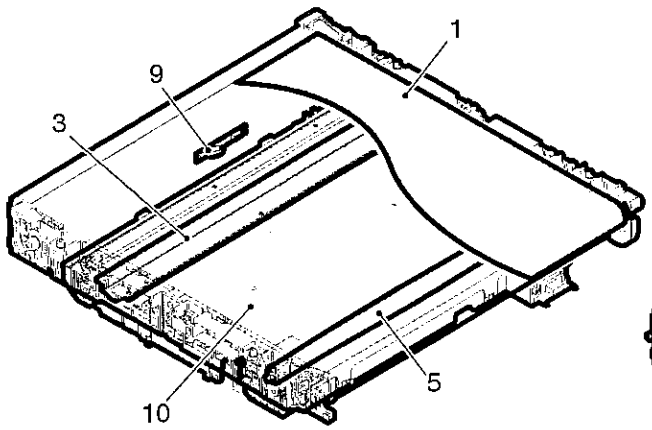
(1) Transfer section maintenance target parts

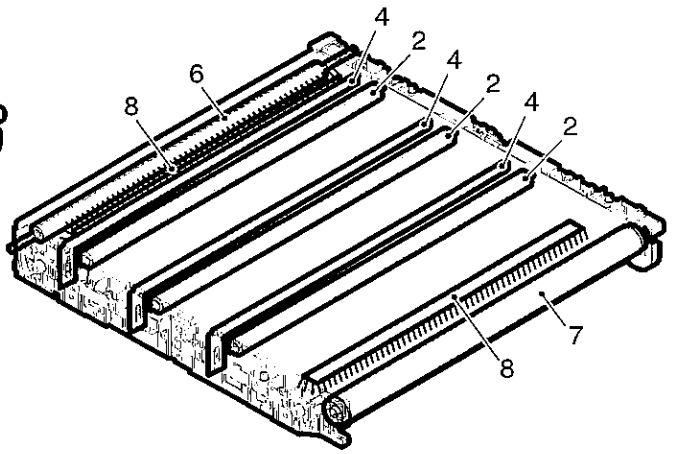
X: Check (Clean, replace, or adjust as necessary.) ○: Clean ▲: Replace △: Adjust ☆: Lubricate □: Shift position

Unit name	No.	Part name	When calling	50K	100K	150K	200K	250K	300K	350K	400K	Remark
Transfer section	1	Transfer belt		×	▲	×	▲	×	▲	×	▲	Replace at 100K or within 2 years.
	2	Transfer roller		×	▲	×	▲	×	▲	×	▲	
	3	Transfer belt cleaning blade		×	▲	×	▲	×	▲	×	▲	Replace at 100K or within 2 years.
	4	Transfer discharge sheet		×	○	×	○	×	○	×	○	
	5	Transfer belt cleaning roller		×	▲	×	▲	×	▲	×	▲	
	6	Transfer drive roller		×	×	×	×	×	×	×	×	
	7	Transfer follower roller		×	×	×	×	×	×	×	×	
	8	Transfer discharge brush		×	×	×	×	×	×	×	×	
	9	Sensors		×	×	×	×	×	×	×	×	
	10	Waste toner tank unit	▲	×	▲	×	▲	×	▲	×	▲	When waste toner full is detected.
	11	Transfer belt unit		×	▲	×	▲	×	▲	×	▲	Replace the unit at 100K or within 2 years.



TX belt clean blade seals.

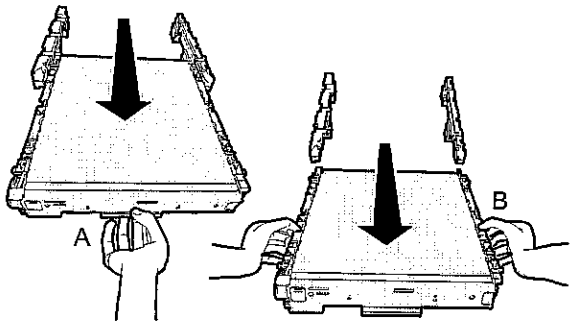




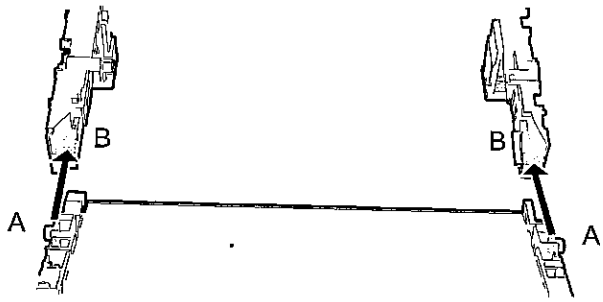
(2) Maintenance parts replacement procedure

a. Transfer unit removal

1) Open the left cabinet, and remove the fusing unit. (Refer to the section of the fusing unit.)
2) Hold section A of the transfer unit and pull it in the arrow direction so that you can hold both sides of the unit.
3) Hold both sides B and remove the transfer unit from the machine.

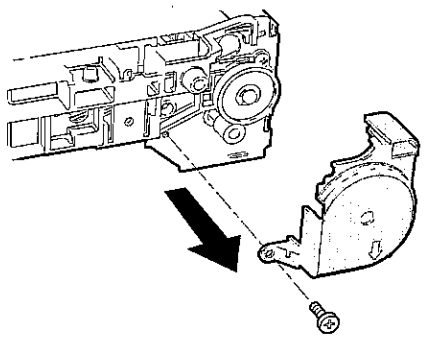


Note: Be careful not to scratch the surface of the transfer belt.

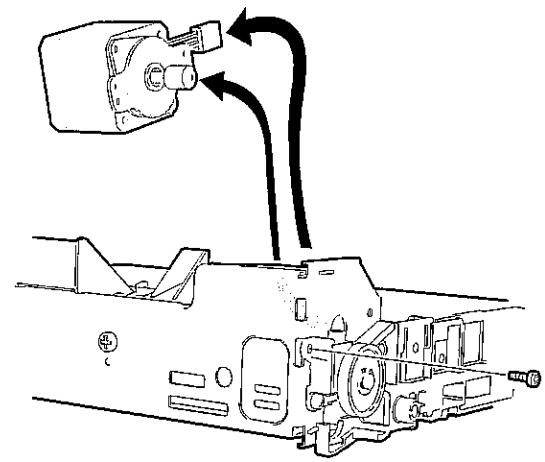


b. Belt drive motor

1) Remove the transfer unit from the machine.
2) Remove the screw, and remove the belt cover gear.

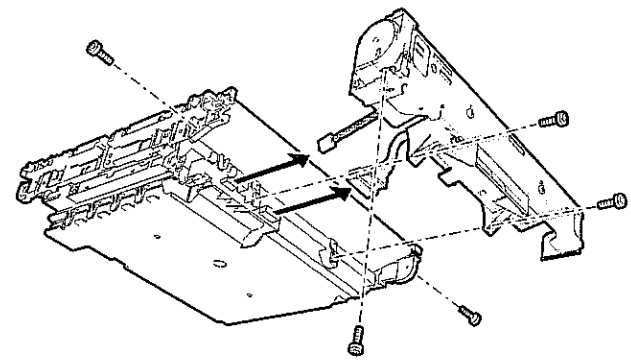


3) Remove the connector, the screw, and the motor.

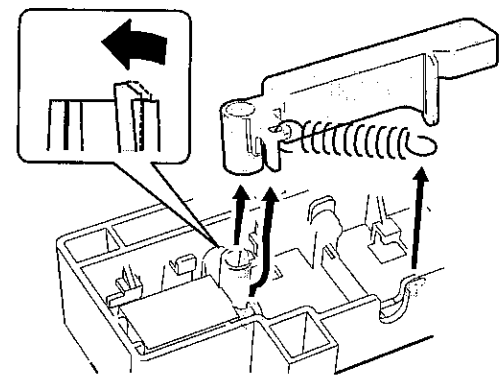


c. Process control sensor

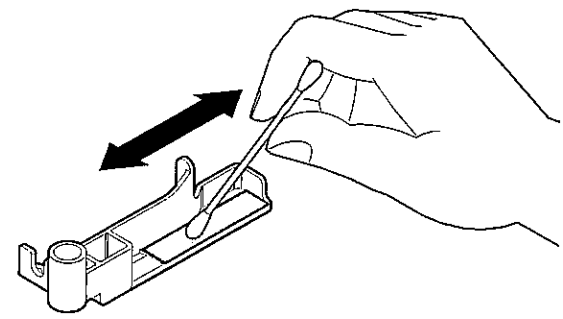
1) Remove the transfer unit from the machine.
2) Remove the connector and the screw, and remove the belt drive unit.



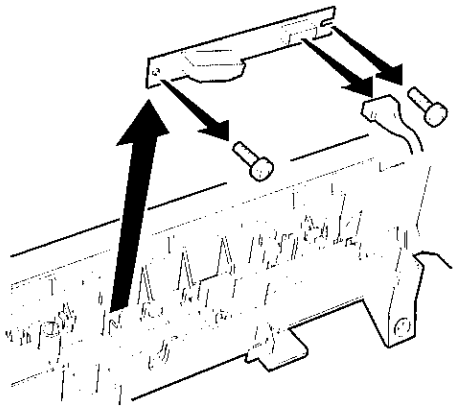
3) Remove the spring from the hook section.
4) Remove the hook, and remove the process control shutter.



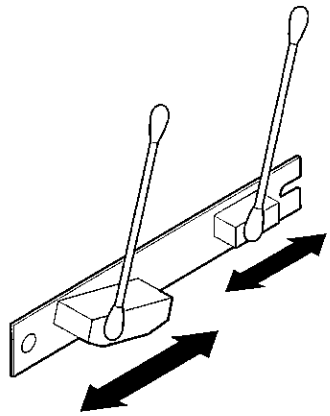
Cleaning: Clean the calibration sheet. (Wipe with soft, dry cloth.)



5) Remove the connector, and remove the process control sensor.

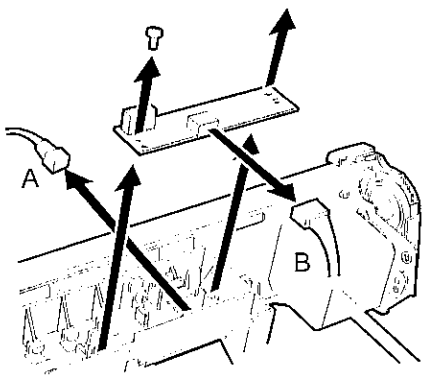


Cleaning: Clean the sensor surface.



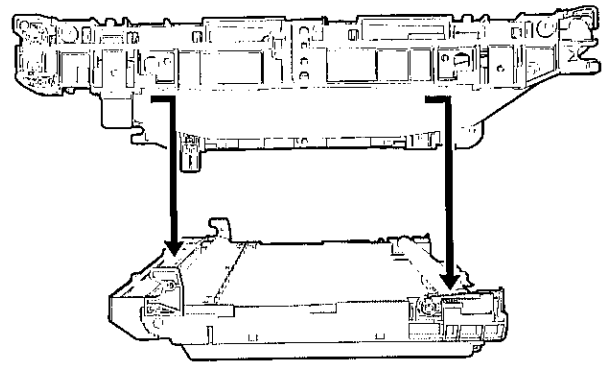
d. PWB

1) Remove the transfer unit from the machine.
2) Remove the connector and the screw, and remove the belt drive unit.
3) Remove the spring from the hook section.
4) Remove the process control shutter.
5) Remove the connector (A).
6) Remove the connector (B) and the screw, and remove the PWB.



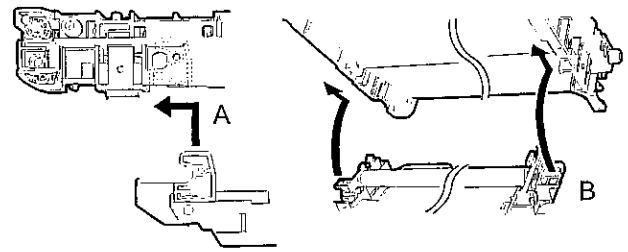
e. Waste toner tank unit

1) Remove the transfer unit from the machine.
2) Remove the connectors and the screws, and remove the belt drive unit.
3) Remove the waste toner tank unit.



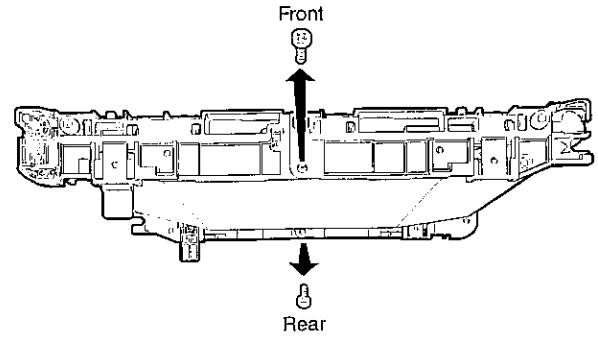
Note for assembly:

Insert the notches A and B of the waste toner tank unit into the positions in the transfer frame indicated in the figure below.



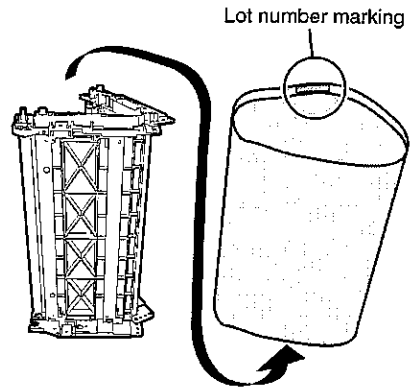
f. Transfer belt

1) Remove the transfer unit from the machine.
2) Remove the connector and the screw, and remove the belt drive unit.
3) Remove the lower screw.



Note: If the upper screw is removed and folded, the electrode is deformed. Therefore, be sure to remove the lower screw.

4) Fold the transfer belt housing and remove the transfer belt.

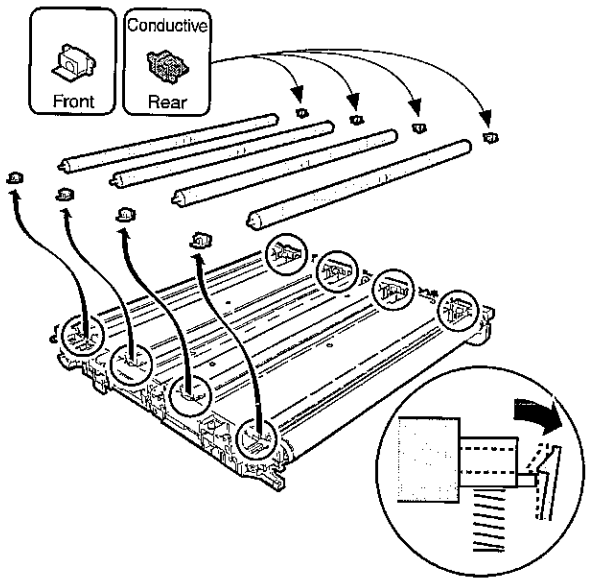


Note for installation:

When installing the transfer belt, be sure to place the lot number section marked inside the transfer belt on the front side.

g. Transfer roller

1) Remove the transfer unit from the machine.
2) Remove the connector and the screw, and remove the belt drive unit.
3) Remove the transfer belt.
4) Disengage the pawl, and remove the bearing and the transfer roller.

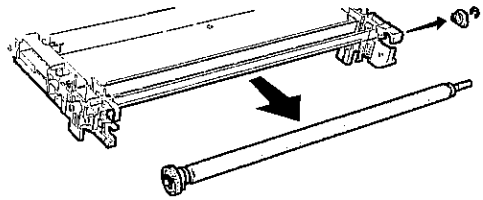


Note for assembly:

There are two different transfer roller bearings: black and white. The black bearing is conductive, and must be attached to the electrode side (rear frame side).

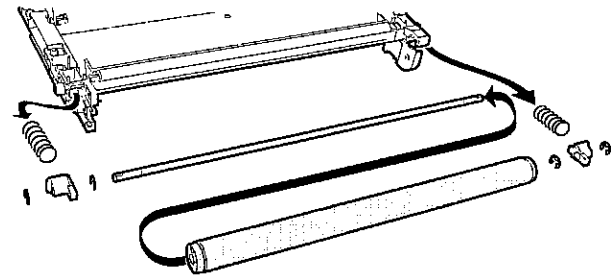
h. Transfer drive roller

1) Remove the transfer unit from the machine.
2) Remove the connector and the screw, and remove the belt drive unit.
3) Remove the transfer belt.
4) Remove the E-ring and the bearing, and remove the transfer drive roller.



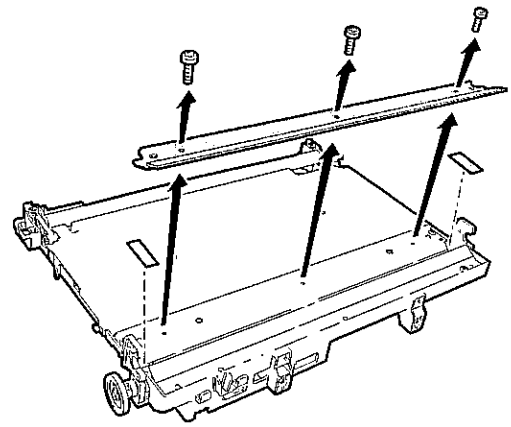
i. Transfer follower roller

1) Remove the transfer unit from the machine.
2) Remove the connector and the screw, and remove the belt drive unit.
3) Remove the transfer belt.
4) Remove the E-ring and the bearing, and remove the transfer follower roller.



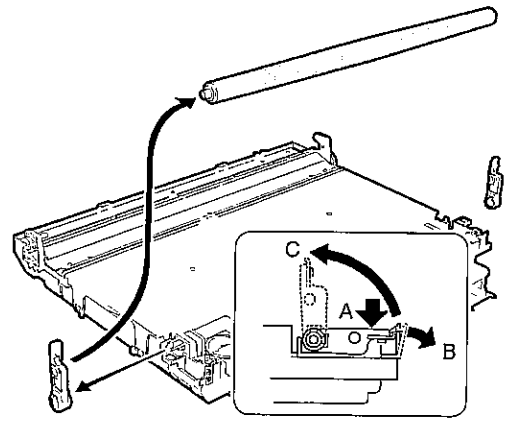
j. Transfer cleaning blade

1) Remove the transfer unit from the machine.
2) Remove the connector and the screw, and remove the belt drive unit.
3) Remove the waste toner tank unit.
4) Remove the screw, and remove the transfer cleaning blade.



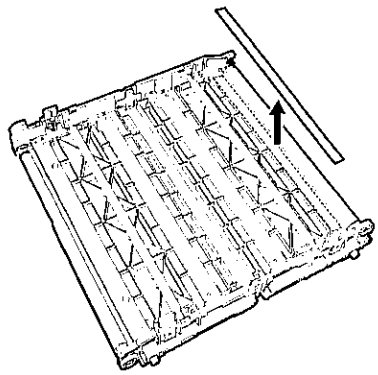
k. Transfer belt cleaning roller

1) Remove the transfer unit from the machine.
2) Remove the connector and the screw, and remove the belt drive unit.
3) Remove the waste toner tank unit.
4) Press the cleaning lever in the arrow direction A, extend the pawl in the arrow direction B, and pull up the cleaning level in the arrow direction C.
5) Remove the transfer belt cleaning roller.



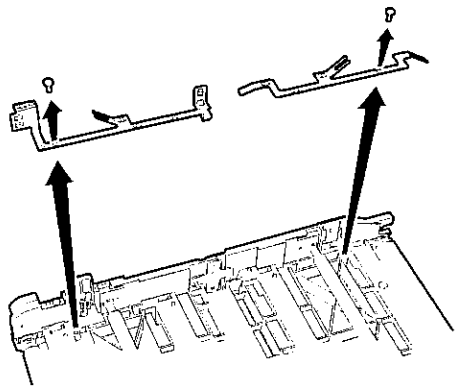
l. Belt cleaning brush

1) Remove the transfer unit from the machine.
2) Remove the connector and the screw, and remove the belt drive unit.
3) Remove the transfer belt.
4) Remove the Belt cleaning brush.

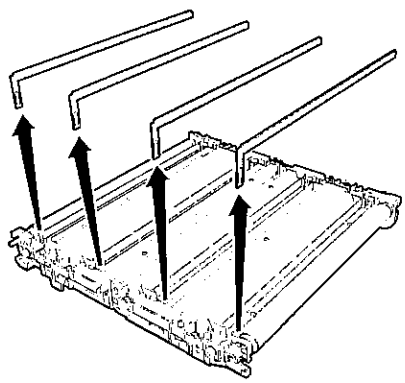


m. Transfer discharge sheets.

1) Remove the transfer unit from the machine.
2) Remove the connector and the screw, and remove the belt drive unit.
3) Remove the transfer belt.
4) Remove the terminals.

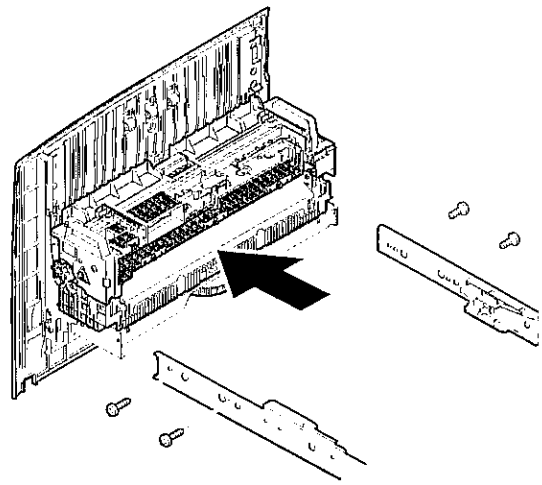


5) Remove the transfer discharge sheets.

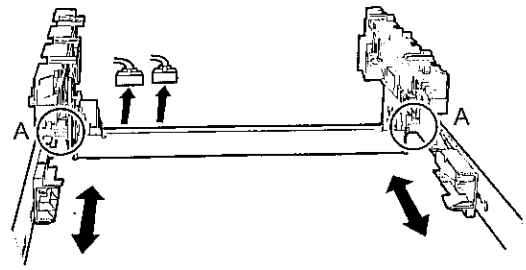


n. Transfer lift-up unit

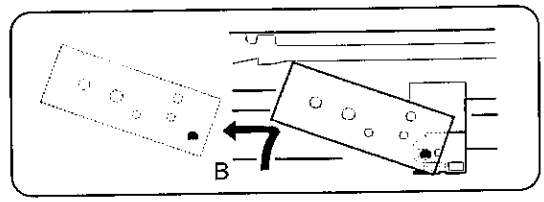
1) Remove the screw, and remove the left cabinet of the machine.

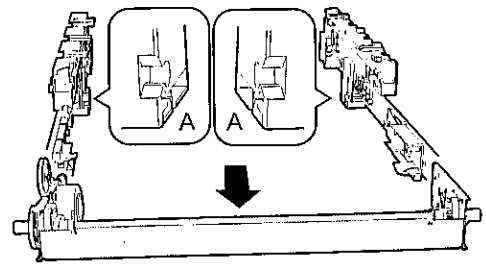


2) Remove the connector.
3) Adjust the rail positions so that section A does not make contact with the acuride section when the transfer lift-up unit is lifted up.

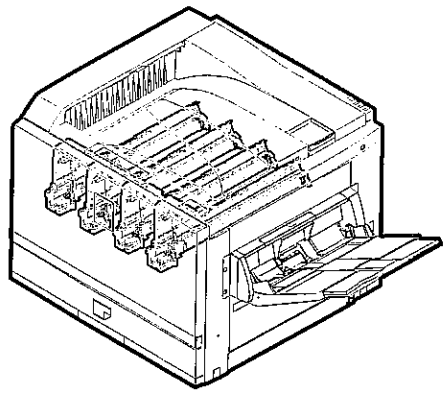


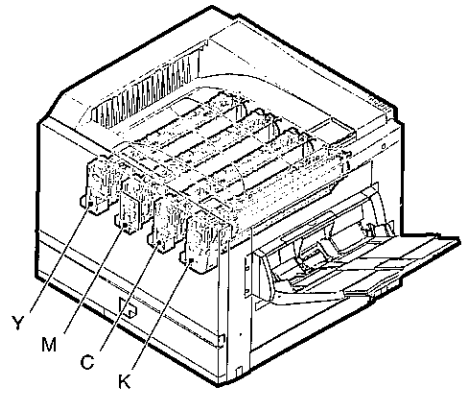
4) Lift the transfer lift-up unit in the arrow direction B with section A as the fulcrum, and remove it.

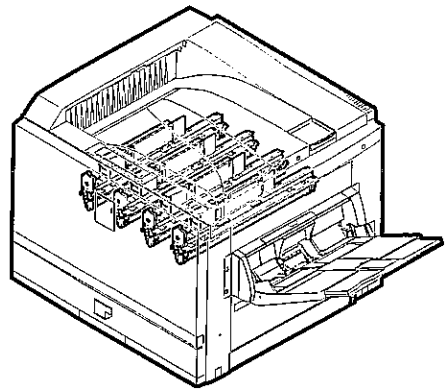




3. Process (image forming) section







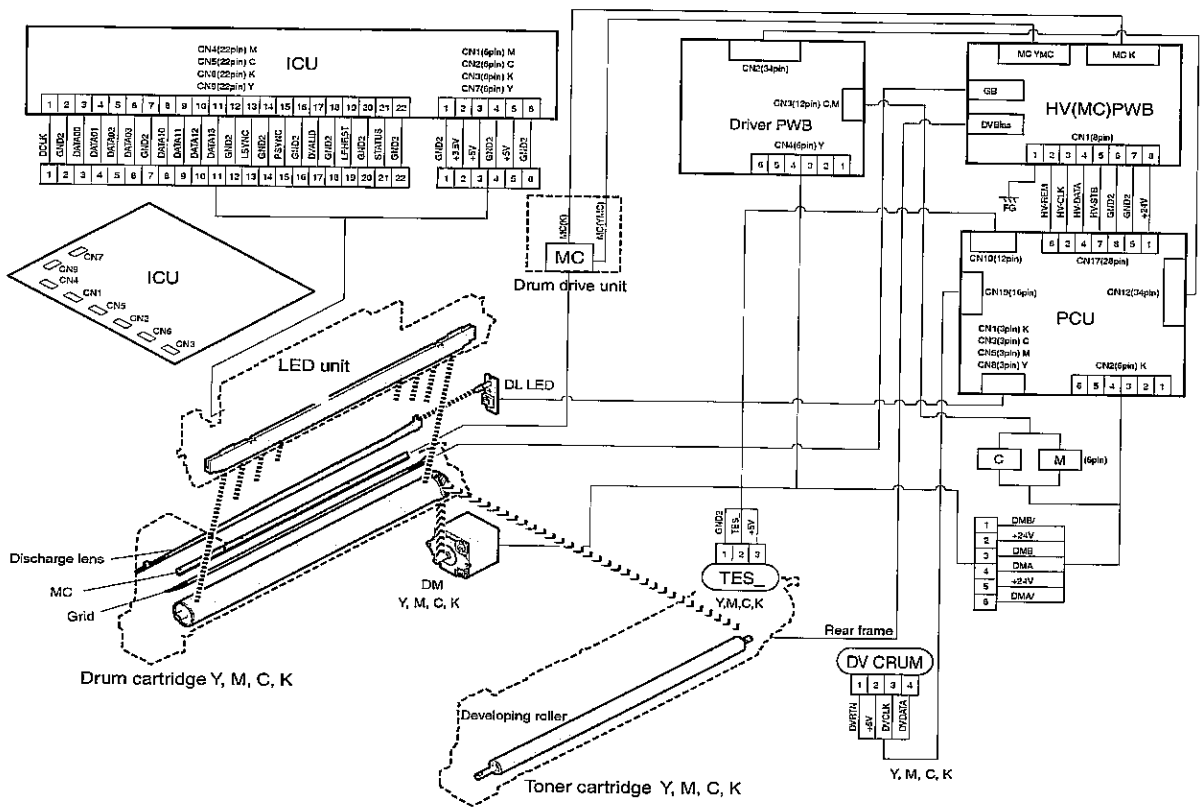
A. Operational descriptions

(1) Outline

This section functions and operates as follows:

1) In this section, the LED is lighted according to the data sent from the image process section to form electrostatic latent images on the OPC drums which are charged evenly by the main charger, and toner is attached to the electrostatic latent images.

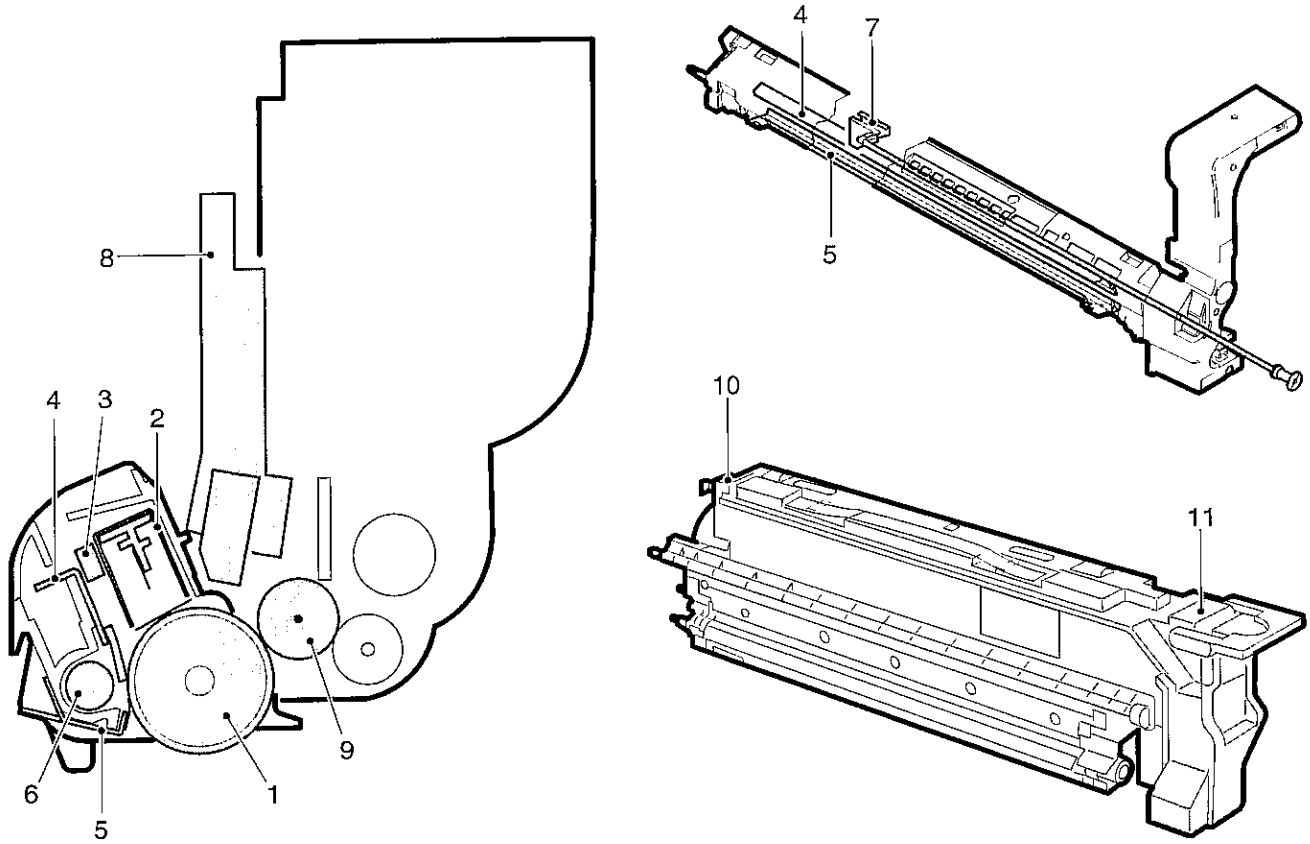
(2) Electrical and mechanical sections



No.	Name	Code, Signal name	Function
RW	Grid bias	GB	Controls the drum surface potential.
RW	Discharge lamp	DL	Radiates lights onto the discharge lens.
RW	Drum motor A, A', B, B'	DM A, A', B, B'	Drives the OPC drum.
RW	Toner empty sensor	TES	Detects the toner quantity in the toner cartridge.

RW: Abbreviation of Related Wiring, which means the said load is specified in the related figure of the mechanical and the electrical sections.

(3) Major parts/signals functions and operations



No.	Name	Code, Signal name	Function
1	OPC drum (YMCK)	—	Forms electrostatic latent images.
2	Main charger (YMCK)	MC	Charges the OPC drum surface negatively.
3	Discharge lens	—	Discharges the OPC drum surface.
4	Cleaning blade	—	Cleans the OPC drum surface to remove residual toner.
5	Toner reception seal	—	Seals to prevent against toner leakage.
6	Waste toner transport screw	—	Transports toner scraped by the cleaning blade to the waste toner box of the toner cartridge.
7	MC cleaner	—	Cleans the MC (charging plate).
8	LED unit	—	Converts image signals into LED light and radiates it onto the OPC drum.
9	Developing roller	—	Attaches toner to the OPC drum. (Do not touch the developing roller.)
10	DV CRUM (Y, M, C, K)	—	Memory for toner cartridge data (counter, etc.)
11	Waste toner box	—	Collects waste toner transported from the drum cartridge.

(4) Operational descriptions

a. Drum cartridge and toner cartridge drive

The drive power for the drum cartridges are transmitted from the drive motor (DM) to the drum gears.

The toner cartridge is driven through the drum gear and the connection gear.

The motor (stepping motor) for black is driven by the drive signal sent directly from the PCU, and the motors color are driven by the drive signals sent from the PCU through the driver PWB.

b. LED (writing) unit

Four LED (writing) units are provided for each of Yellow, Magenta, Cyan, and Black.

Each LED (writing) unit converts YMCK dot image data outputted from the ICU PWB into LED light, and radiate the light onto the OPC drum, forming electrostatic latent images on the OPC drum.

Since the position of each LED unit of CMYK is shifted in the paper transport direction, the above operation depends on the relative position and differs in the operating timing.

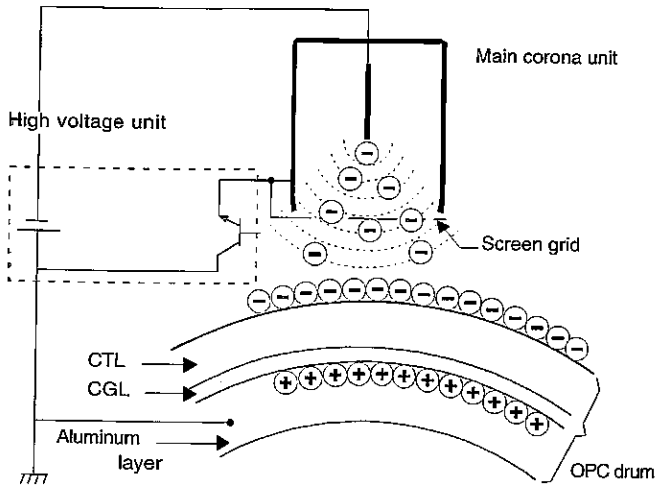
• LED unit composition

Item		Content
Print width		314mm
Total number of dots		7424 dot
Resolution		600dpi
LED composition	Number of LED chips	58 chip
	Number of dots	128 dot
Lens		Selfoc lens

c. OPC drum section operations

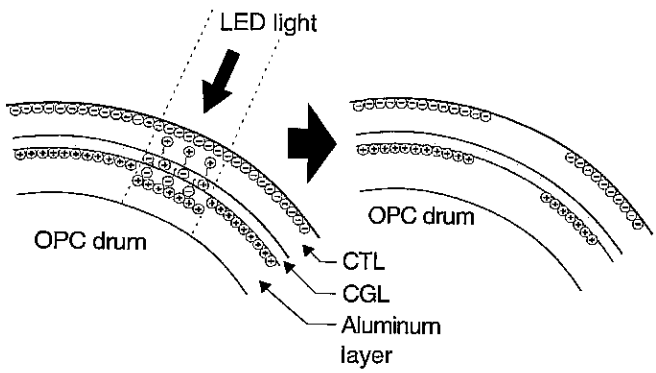
The OPC drum surface is charged negatively by the main charger, and LED light of images are radiated onto the OPC drum surface by the LED (writing) unit to form electrostatic latent images.

1) The OPC drum surface is negatively charged by the main charger.



The screen grid is attached to the main charger unit. The OPC drum is charged at a voltage nearly same as the voltage applied to the screen grid.

2) LED light is radiated onto the OPC drum surface by the LED (writing) unit to form electrostatic latent images.



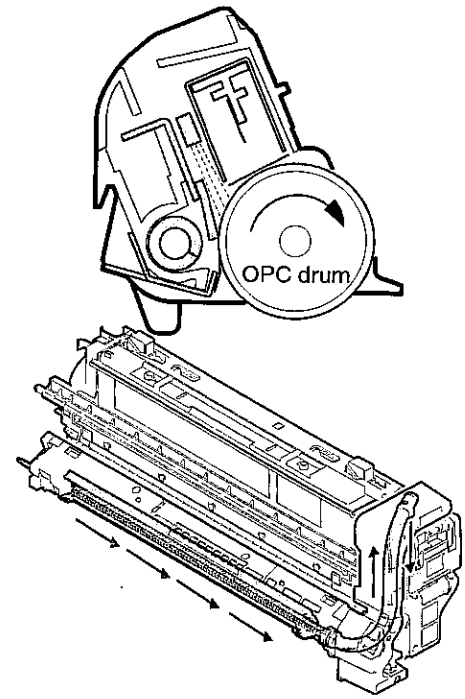
When LED light is radiated onto the OPC drum CGL, positive and negative charges are generated. Positive charges generated in the CGL are attracted and moved by negative charges of the OPC drum, and negative charges by positive charges of the aluminum layer of the OPC drum. Therefore, on the OPC drum surface and in the aluminum layer, positive and negative charges are neutralized, reducing the OPC drum surface potential.

Electric charges remain in the areas where LED light is not radiated onto the OPC drum.

As a result, electrostatic latent images are formed on the OPC drum surface.

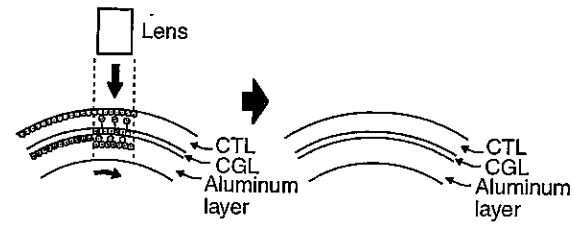
Charges are disposed in direct proportion to the amount of light received.

3) Clean and remove residual toner from the OPC drum with the cleaning blade after transfer operations.



Removed residual toner is transported to the waste toner section of the toner cartridge by the waste toner transport screw.

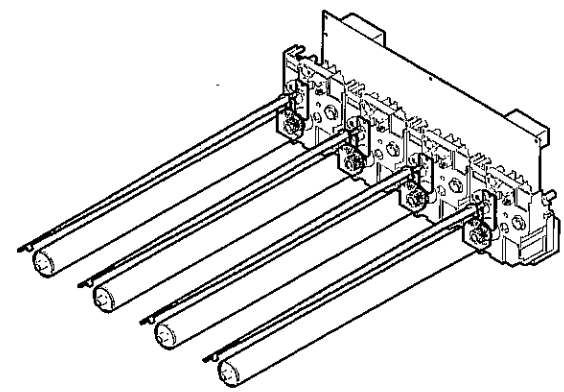
4) The whole surface of the OPC drum is discharged.



By radiating discharge lamp light onto the discharge lens, light is radiated through the discharge lens to the OPC drum surface.

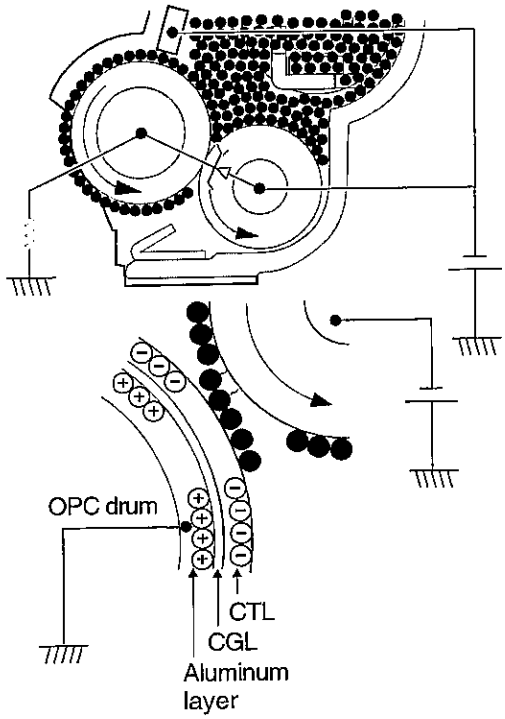
When discharge lamp light is radiated onto the OPC drum CGL, positive and negative charges are generated.

Positive charges generated in the CGL are attracted and moved by negative charges of the OPC drum, and negative charges by positive charges of the aluminum layer of the OPC drum. Therefore, on the OPC drum surface and in the aluminum layer, positive and negative charges are neutralized, reducing the OPC drum surface potential, preparing the drum surface for the new copy cycle.



d. Developing section (composed of four units of YMCK) operations

Electrostatic latent images generated on the OPC drum by the LED (writing) units are converted into visible images by toner.



Toner in the developing unit is agitated by the mixing roller.

By mixing operation, toner is negatively charged due to mechanical friction.

The developing bias voltage (negative) is applied to the developing roller.

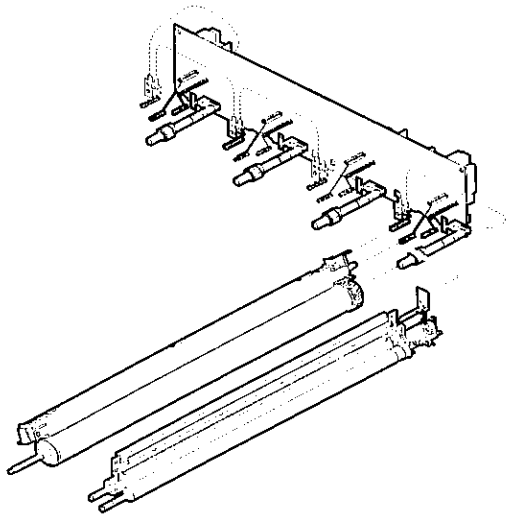
The difference for the voltage potential between the toner and DV roller surface attracts the toner to the DV roller.

In the areas of the OPC drum, when the charge was detected, the voltage potential difference is greater than the DV roller. Therefore the toner is attracted from the DV roller to the drum.

In the unexposed areas of the drum, the potential on the DV roller created by the bias voltage and therefore the toner to not attracted to those areas of the drum.

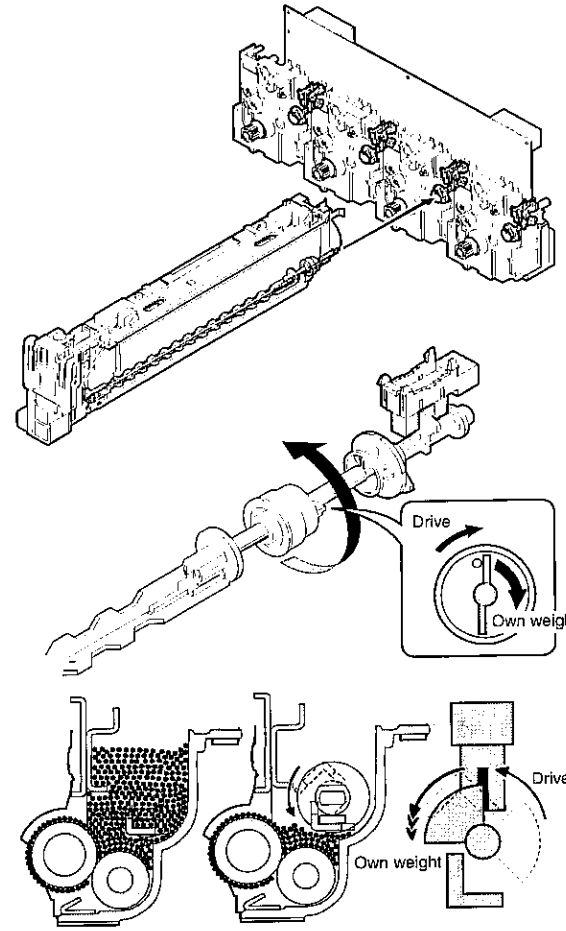
Negatively charged toner is attracted and attached to the exposed area on the OPC drum surface where the negative potential was reduced by LED exposure.

On the other hand, in the areas on the OPC drum where exposure was not made, the positive potential is higher than the developing bias voltage, repelling toner.



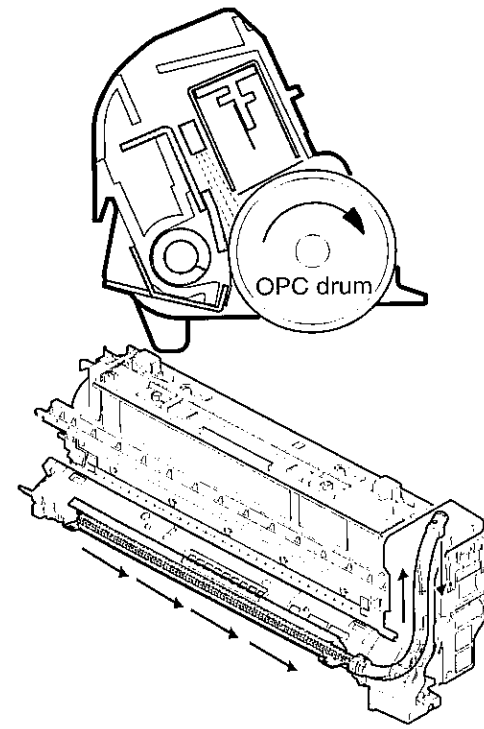
<1> Remaining toner quantity detection

Rotation of the detection lever connected to the mixing roller is sensed by the sensor (TES) to detect the remaining toner quantity.



<2> Waste toner collection

Waste toner collected by the drum cleaning blade is transported to the waste toner box of the toner cartridge by the toner transport spring in the drum unit.



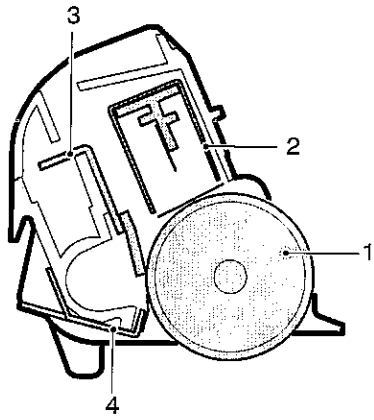
B. Disassembly/assembly/maintenance

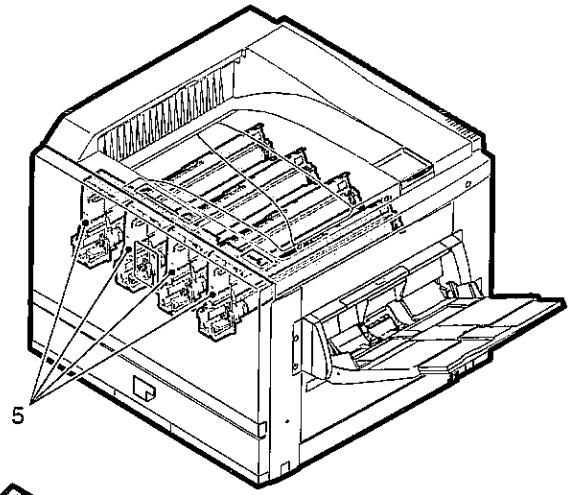
(1) Process section maintenance target parts

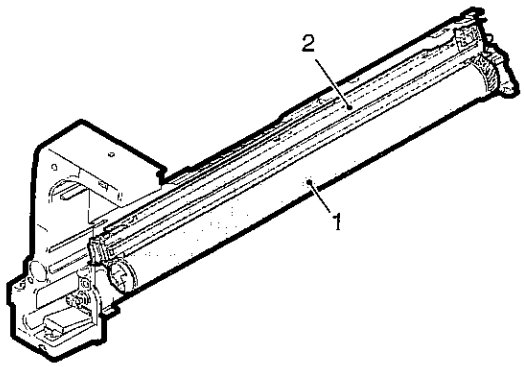
X: Check (Clean, replace, or adjust as necessary.) O: Clean ▲: Replace △: Adjust ☆: Lubricate ❑: Shift position

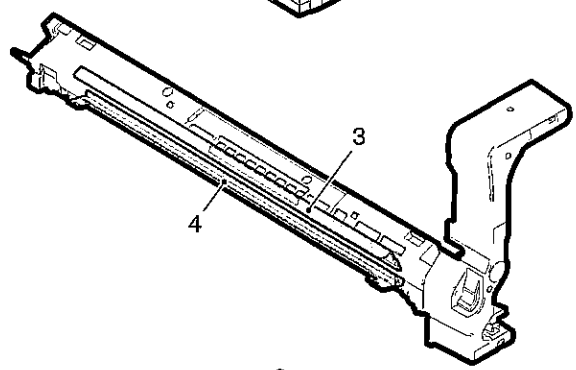
Unit name	No.	Part name	When calling	50K	100K	150K	200K	250K	300K	350K	400K	Remark
Drum module	1	Drum (Black/color)		▲	▲	▲	▲	▲	▲	▲	▲	
	2	Charging unit		▲	▲	▲	▲	▲	▲	▲	▲	
	3	Cleaner blade		▲	▲	▲	▲	▲	▲	▲	▲	
	4	Toner reception seal		▲	▲	▲	▲	▲	▲	▲	▲	
	5	Drum cartridge		▲	▲	▲	▲	▲	▲	▲	▲	When replacing the unit
Developing section (integrated with toner cartridge)	6	Toner cartridge	User replacement at every toner empty									
LED	7	LED lens	O	O	O	O	O	O	O	O	O	

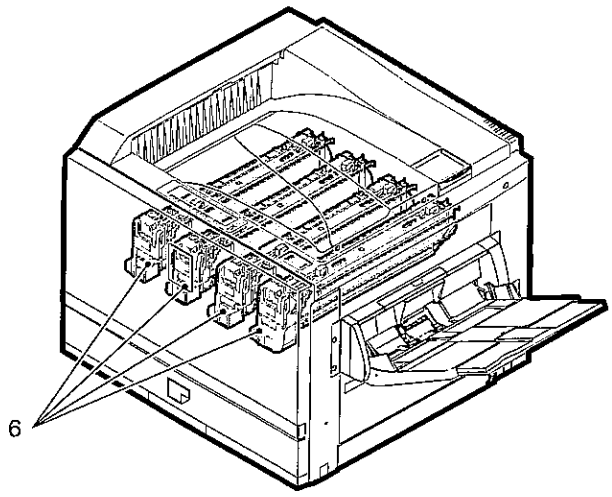
Note: When replacing the OPC drum, execute SIM 25-1 for 2 minutes. (This simulation is executed in order to avoid generation of stripes on a half-tone print image.)

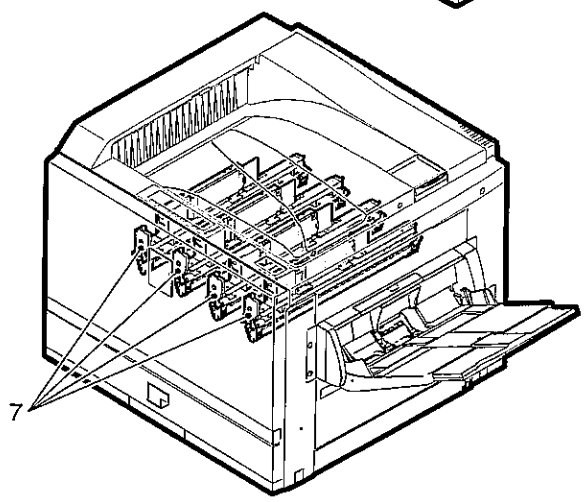








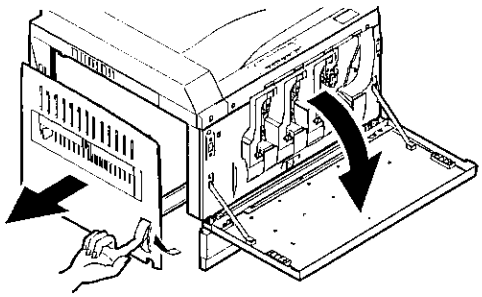




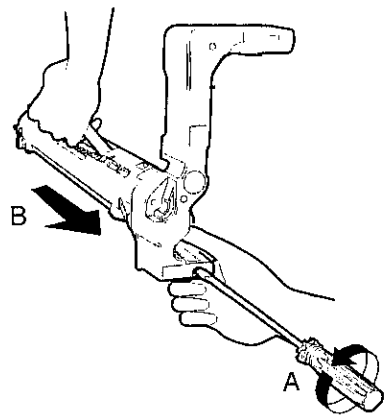
(2) Maintenance parts/major parts replacement

a. Drum unit removal

1) Open the front cabinet and left cabinet.



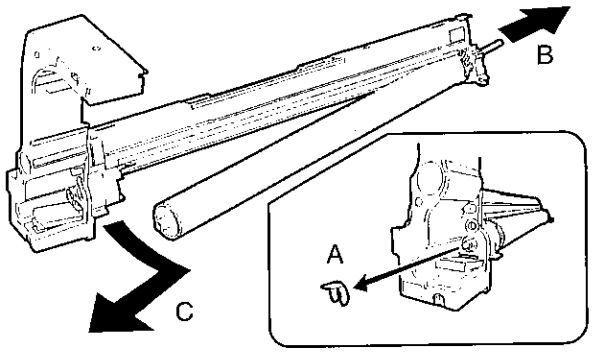
2) Turn the fixing screw in the arrow direction A to release it, and remove the drum unit in the arrow direction B.



Note: Be sure to open the left cabinet before releasing the fixing screw.
If the fixing screw is released before opening the left cabinet, the lock cannot be released.
In that case, push the drum unit to the rear frame side and release the lock, and remove the drum unit.

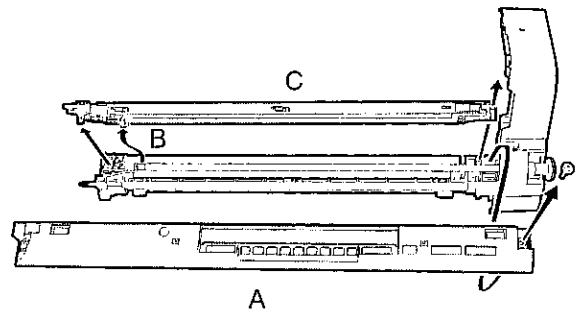
b. Drum removal

1) Remove the drum unit.
2) Remove the retaining clip from the drum shaft (A).
3) Slide the drum shaft in the arrow direction B.
4) Remove the drum in the arrow direction C.



c. Charging unit

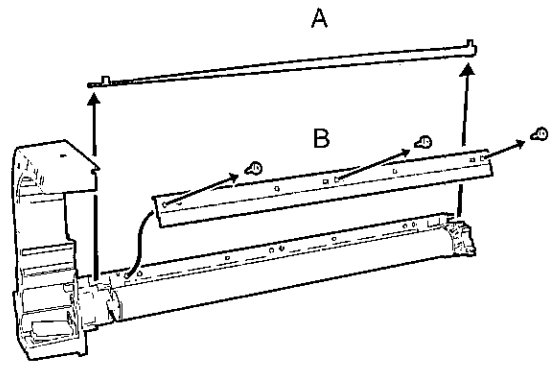
1) Remove the drum unit.
2) Remove the screw and remove the cover (A).
3) Remove the MC unit from the MC cleaning shaft.
4) Remove the charging unit (C).



* When assembling, attach the drum, then attach the charging unit. (This is to prevent against dirt by starting powder applied to the drum.)

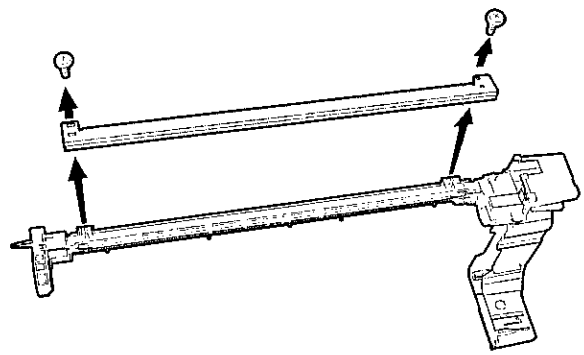
d. Cleaner blade

1) Remove the drum unit.
2) Remove the charging unit.
3) Remove (A).
4) Remove the screw, and remove the cleaner blade.



e. Toner reception seal

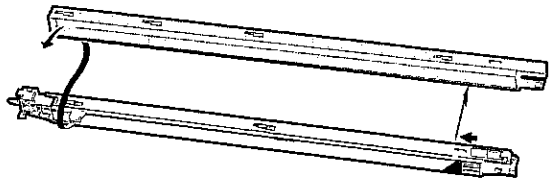
1) Remove the drum unit.
2) Remove the drum.
3) Remove the screw, and remove the toner reception seal.



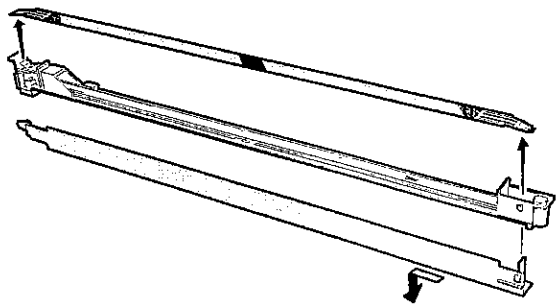
Note: Do not deform the seal.

f. MC cleaner

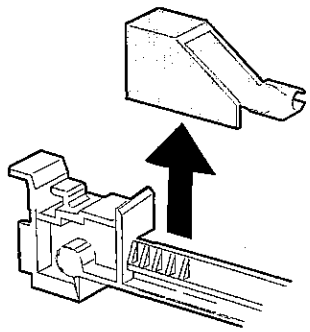
1) Remove the drum unit.
2) Remove the screw, and remove cover (A).
3) Remove the MC unit.
4) Release the pawl, and remove the MC case upper in the arrow direction.



5) Release the pawl, and remove the MC case lower in the arrow direction.
6) Remove the screen grid.

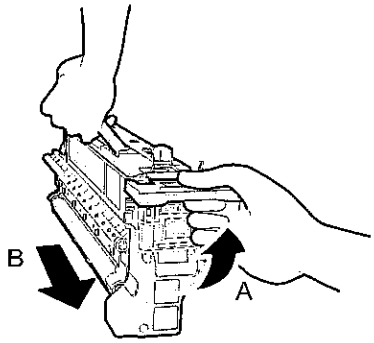


7) Disengage the pawl, and remove the MC cleaner.



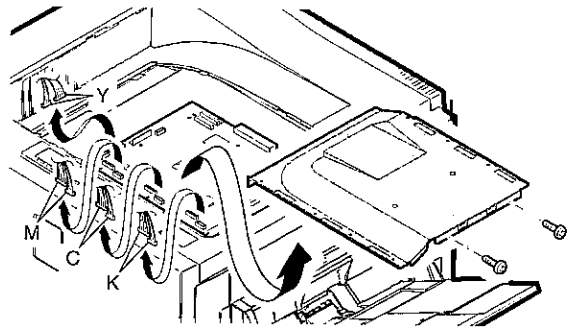
g. Developing unit removal

1) Open the front cabinet and the left cabinet of the machine.
2) Lift the lever in the arrow direction A, and remove the developing unit in the arrow direction B.

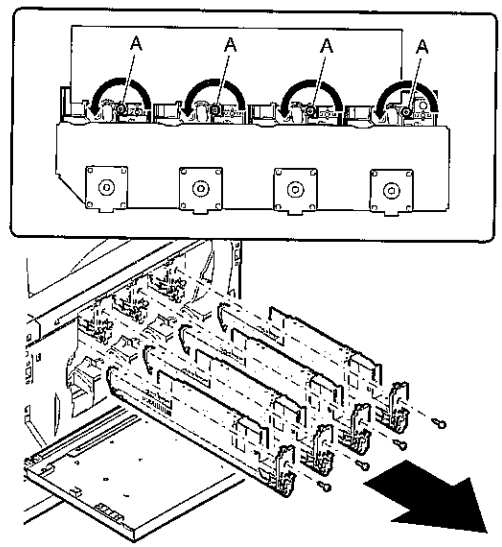


h. LED unit removal

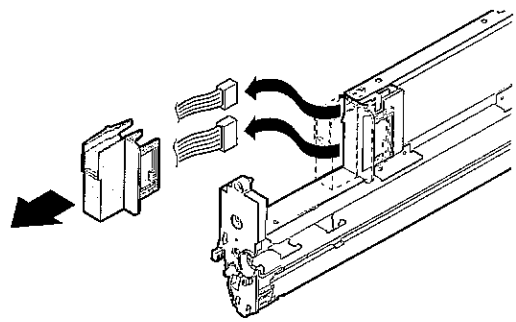
1) Remove the rear cabinet.
2) Remove the PCU PWB unit.
3) Remove the drum unit.
4) Remove the developing unit.
5) Remove the top cover, and disconnect the connector of the ICU.



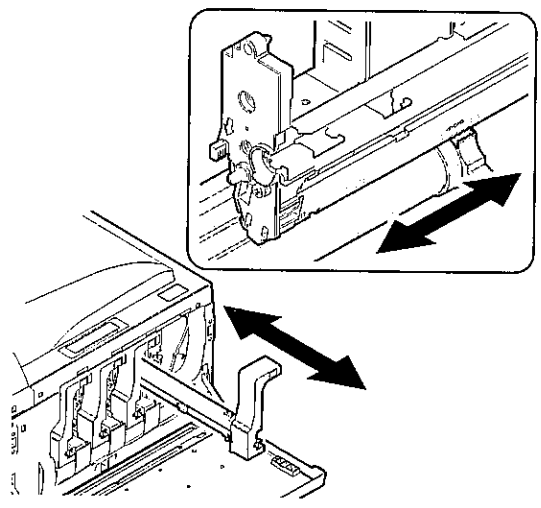
6) Remove the screw (A) on the rear side, and remove the LED unit.



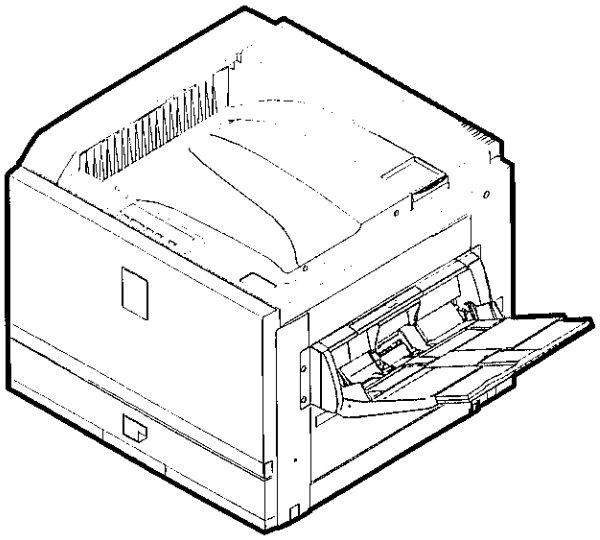
7) Remove the LED unit.
8) Remove the connector cover and the harness.

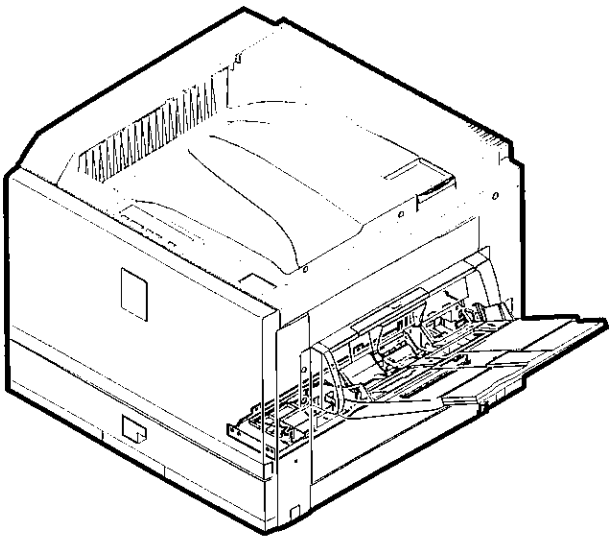


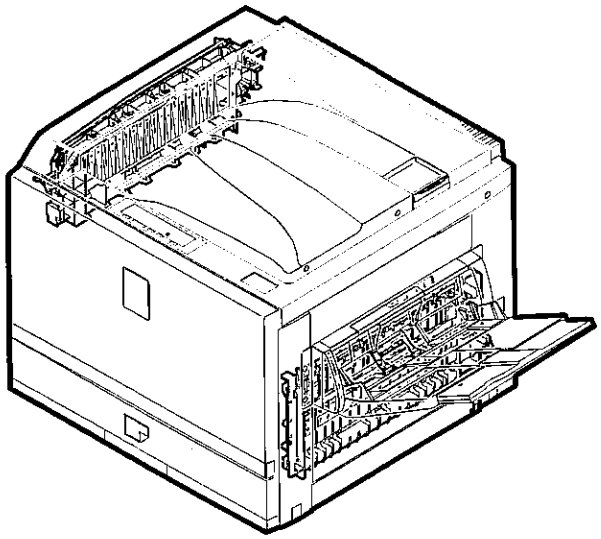
i. LED lens cleaning



4. Paper feed, paper transport, and paper exit sections







A. Operational descriptions

(1) Outline

This model is provided with a cassette paper feed tray and a manual paper feed tray as standard provision.

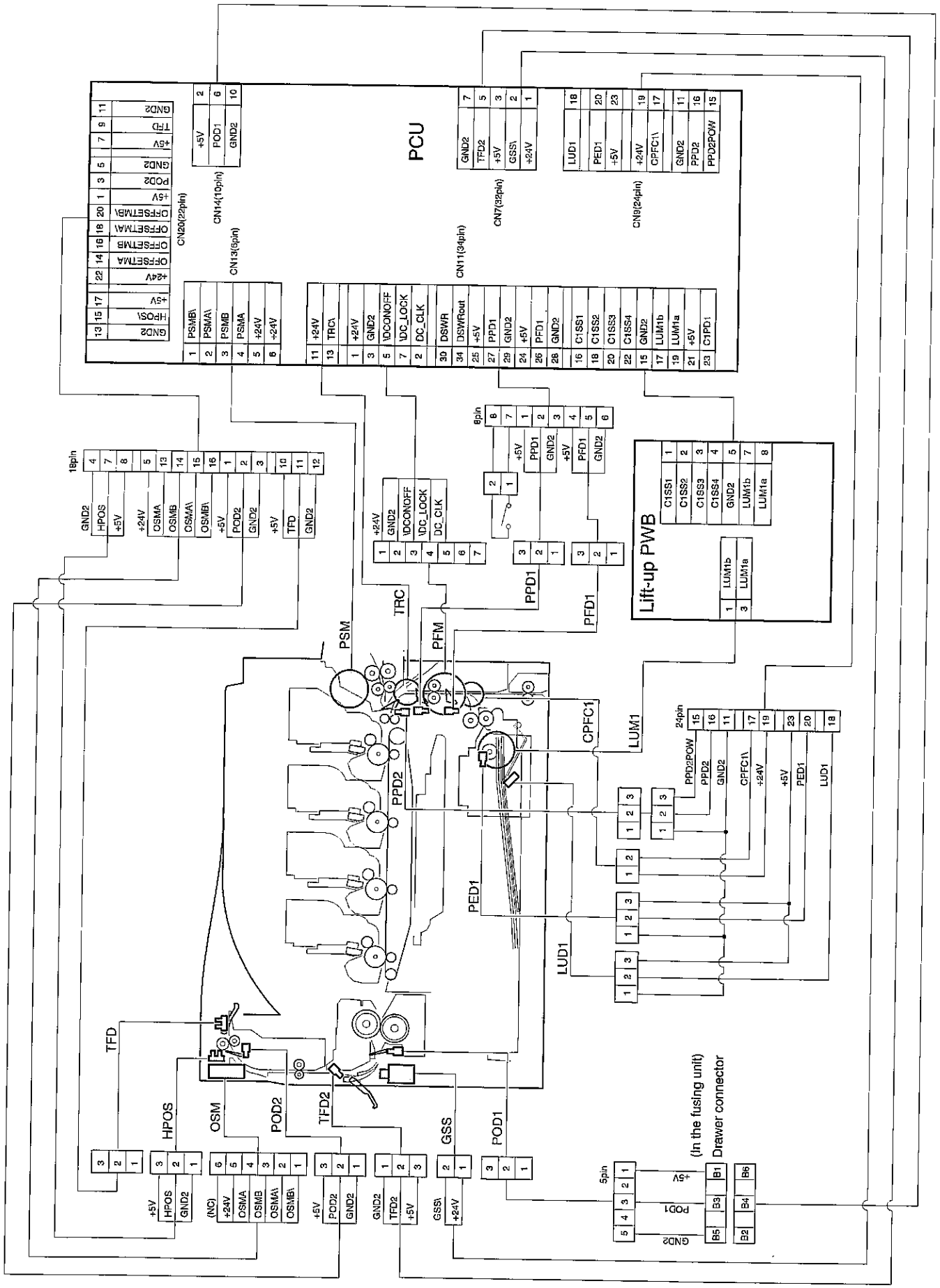
As an option, either the 3-stage paper feed cassette module (AR-D18) or the 2-stage duplex paper feed cassette module (AR-D19) can be installed.

The paper transport section transports paper from each paper feed port to the PS roller section.

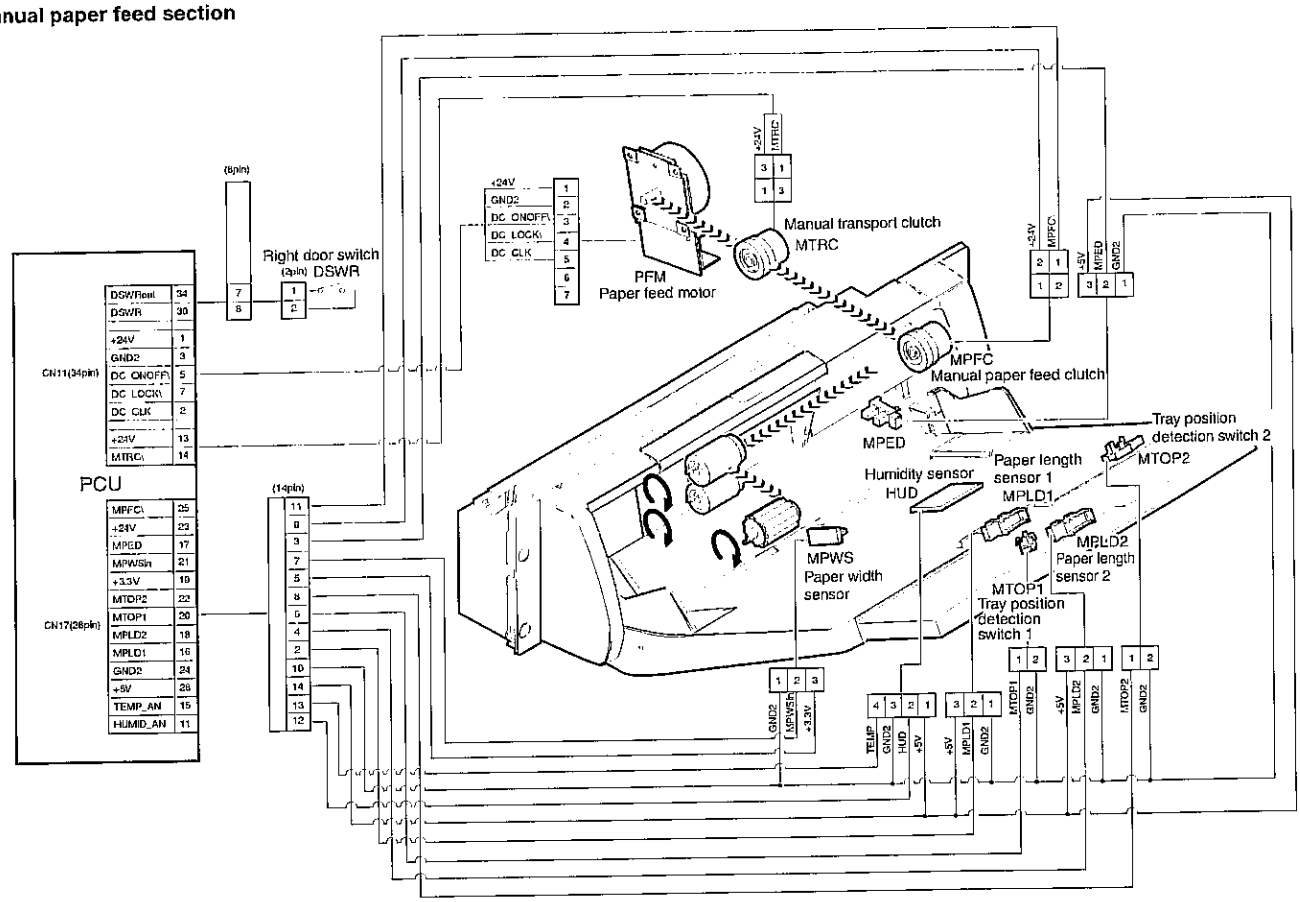
Paper with images transferred on it in the transfer section is passed to the fusing section, and discharged to the face-up tray or the face-down tray.

(2) Electrical section and mechanical section

a. Cassette paper feed, paper transport, and paper exit sections



b. Manual paper feed section

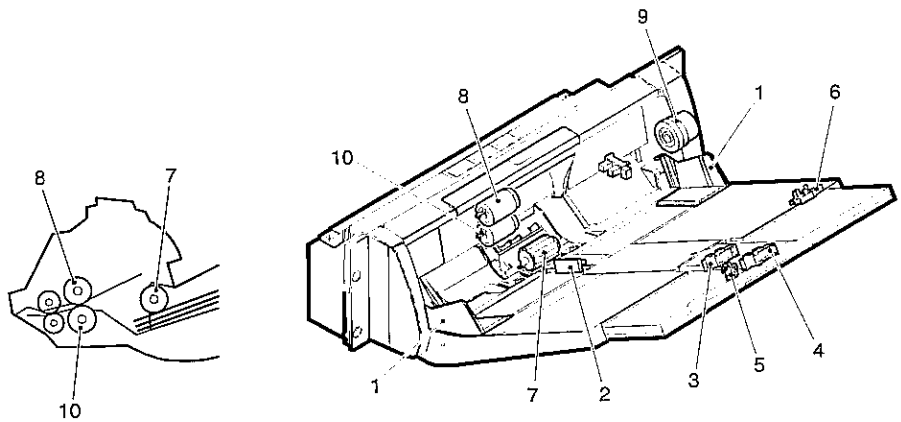


No.	Name	Code, Signal name	Function
RW	Paper detector	MPED	Detects paper empty/presence in the paper tray.
RW	Manual transport clutch	—	Transmits the paper feed motor power to the manual paper feed unit.
RW	Paper feed motor	—	Drives the paper feed section and the manual paper feed unit.

RW: Abbreviation of Related Wiring, which means the said load is specified in the related figure of the mechanical and the electrical sections.

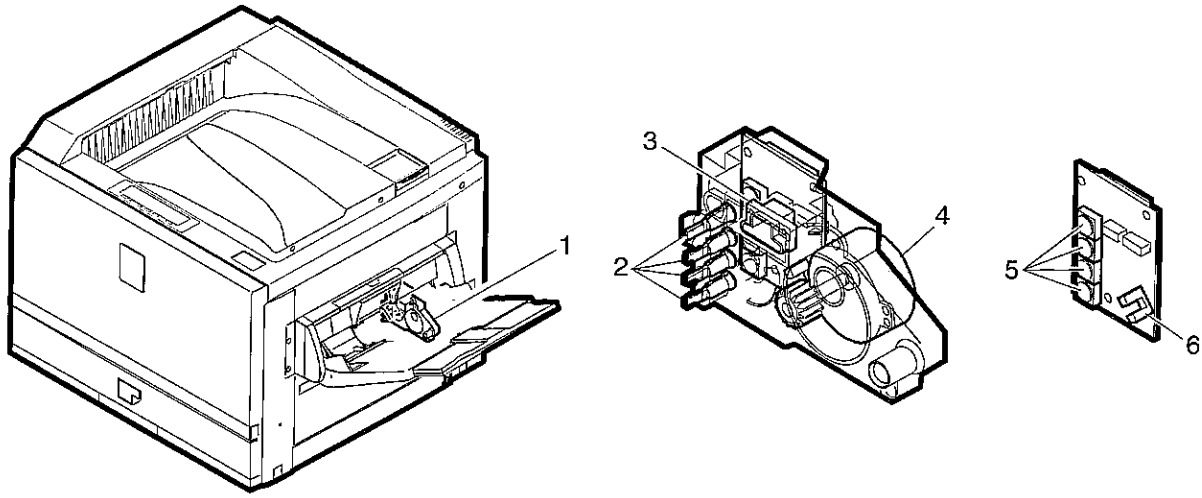
(3) Major parts and signals functions and operations

a. Manual paper feed unit



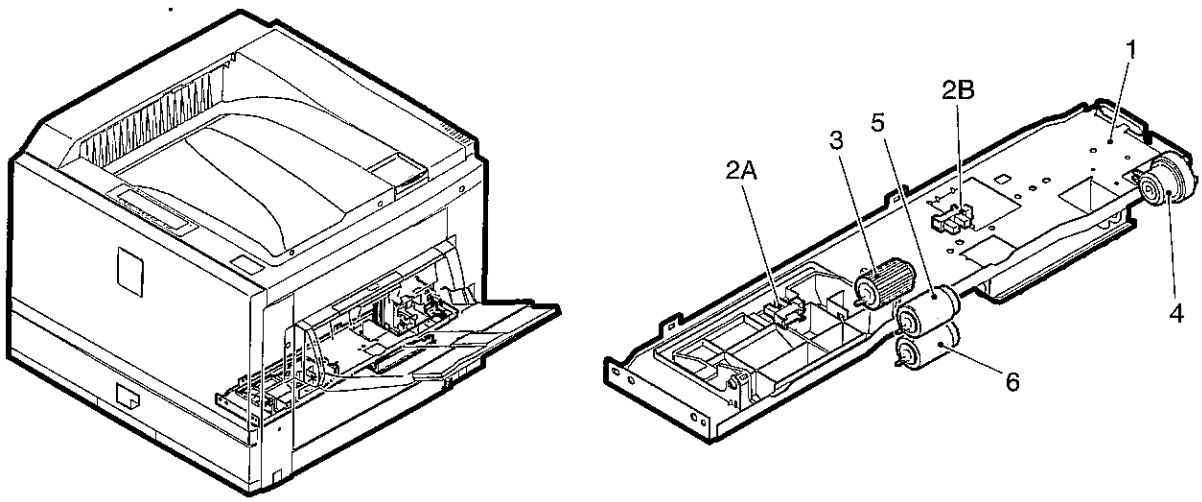
No.	Name	Code, Signal name	Function
1	Paper size (width) adjuster	—	Adjusts the paper position.
2	Paper size (width) sensor	MPWS	Detects the paper width.
3	Paper size (length) detector	MPLD1	Detects the paper length.
4	Paper size (length) detector	MPLD2	Detects the paper length.
5	Tray position detector	MTOP1	Detects the paper tray position.
6	Tray position detector	MTOP2	Detects the paper tray position.
7	Paper pickup roller	—	Sends paper to the paper feed roller.
8	Manual paper feed roller	—	Feeds paper to the paper transport section.
9	Manual paper feed clutch	MPFC	Transmits the paper feed drive motor power to the manual paper feed roller.
10	Separation roller	—	Separates paper and transmits it to the paper feed unit.

b. Paper tray lift unit



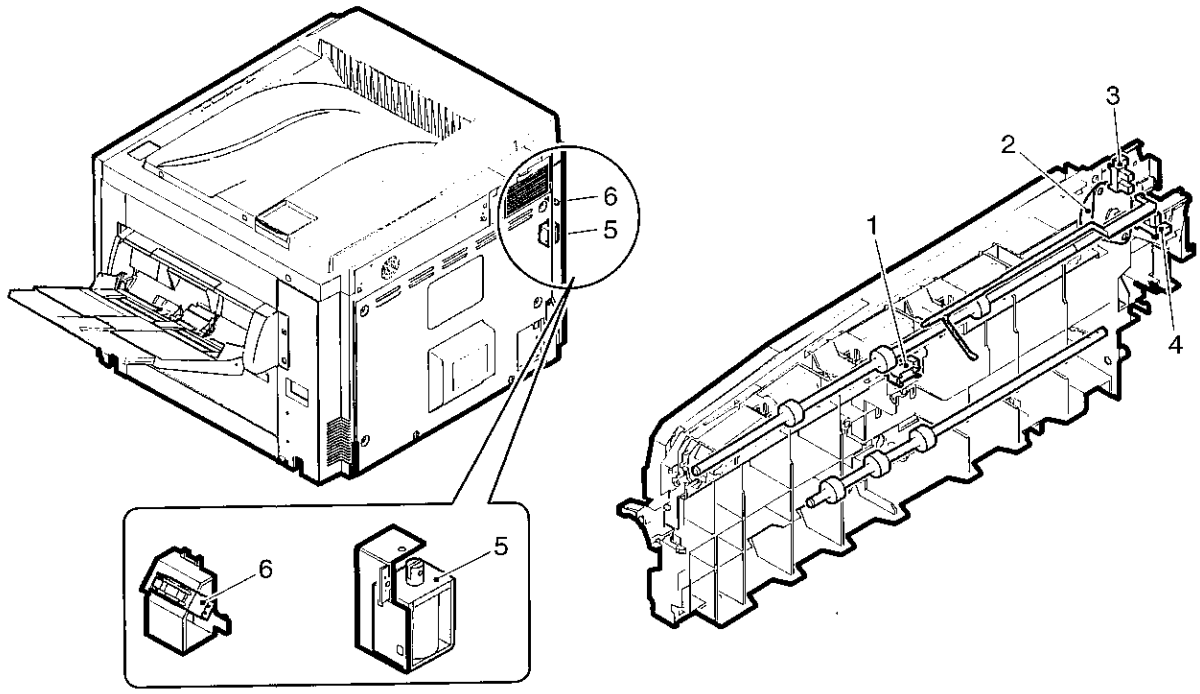
No.	Name	Code, Signal name	Function
1	Paper tray lift unit	—	Drives the paper tray lift plate.
2	Paper size detection actuator	—	Transmits the status data of the paper size block to the paper size detector.
3	Paper tray lift unit control PWB	—	Controls the paper tray lift unit.
4	Lift motor	LUMx	Drives the lift plate.
5	Paper size detector (switch)	CxSSx	Detects the paper size set by the paper size set block.
6	Lift position sensor	CxPDx	Detects the lift plate position.

c. Paper feed unit



No.	Name	Code, Signal name	Function
1	Paper tray paper feed unit	—	Feeds paper from the paper tray to the transport section.
2A	Paper empty detector	PEDx	Detects paper empty in the paper tray.
2B	Paper upper limit detector	LUDx	Detects the paper upper limit position. (Keeps the friction between the paper pickup roller and paper at a constant level.)
3	Paper pickup roller	—	Feeds paper to the paper feed roller.
4	Paper feed clutch	CPFCx	Controls ON/OFF of the paper feed roller.
5	Paper feed roller	—	Feeds paper to the paper transport section.
6	Separation roller	—	Separates paper to prevent against double feed.

d. Paper exit section



No.	Name	Code, Signal name	Function
1	Paper exit sensor	POD2	Detects discharged paper.
2	Offset motor	OSM	Drives the paper exit offset.
3	Shifter home position sensor	HPOS	Detects the offset home position.
4	FD paper exit full sensor	TFD	Detects the face-down paper exit tray full.
5	Paper exit switch gate solenoid	GSS	Drives the face-up/down switch gate.
6	FU paper exit full sensor	TFD2	Detects the face-up paper exit tray full.

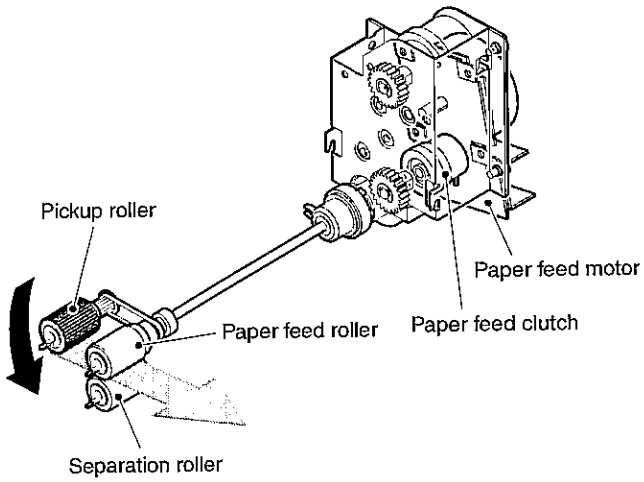
(4) Operational descriptions

a. Paper feed tray section operation

The paper pickup roller moves up and down to press paper and separates the top paper, which is fed to the paper feed roller.

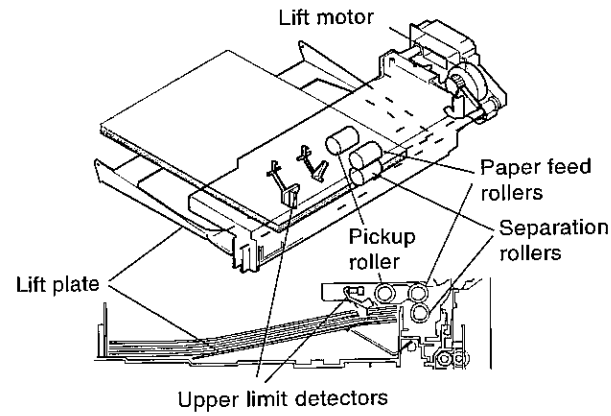
The paper feed roller feeds paper to the paper transport section. The separation roller prevents against double feed.

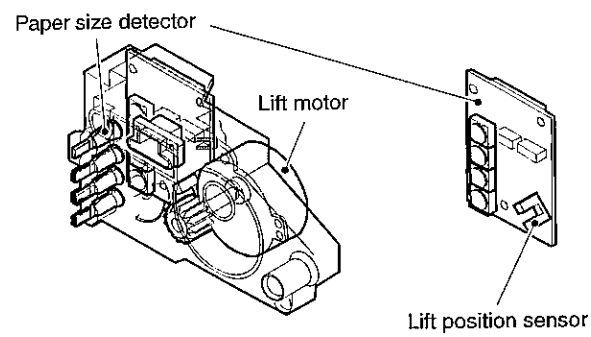
ON/OFF control of the pickup roller and the paper feed roller is performed by the paper feed clutch.



The paper lift plate lifts paper to control the upper limit position of paper so that the pressure between the top paper and the pickups roller remains constant. Lifting is performed by the lift motor and the lift gear.

The lift position is detected by the paper upper limit detector to control the pressure between the top paper and the pickup roller.





The paper feed tray is provided with the paper size detection block, and the status of this block is detected with the combination of ON/OFF of the four paper size detectors to recognize the paper size.

Relationship between the paper size detector and the paper size

Paper size detector				Paper size		
				Destination		
CSS4	CSS3	CSS2	CSS1	Japan	AB series	Inch series
ON	OFF	OFF	ON	A3	A3	11 x 17
OFF	OFF	ON	ON	B4	B4	8.5 x 14
ON	OFF	ON	OFF	A4R	A4R	11 x 8.5R
OFF	ON	ON	OFF	A4	A4	11 x 8.5
OFF	ON	ON	ON	B5R	B5	INVOICE
OFF	ON	OFF	ON	B5	A5	FOOLSCAP
ON	ON	ON	OFF	A5	11 x 8.5	A4
ON	ON	OFF	OFF	EXTRA	EXTRA	EXTRA
Patterns other than above				Recognized that the paper tray is not inserted.		

EXTRA: Operates with the paper size set by the user program.

The lift position sensor detects the lift plate lower limit position. Then lift-up operation is started, and the rotation of the lift motor up to detection of the upper limit by the paper upper limit detector is used to calculate the paper remaining quantity.

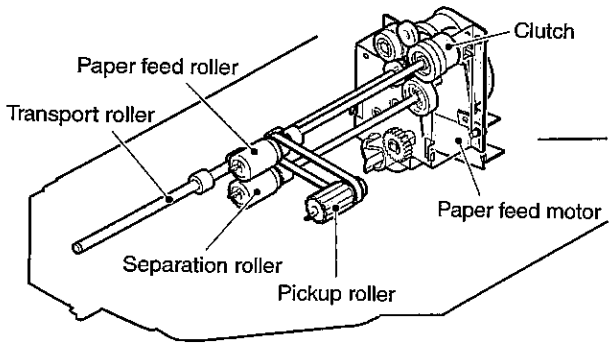
b. Manual paper feed section operation

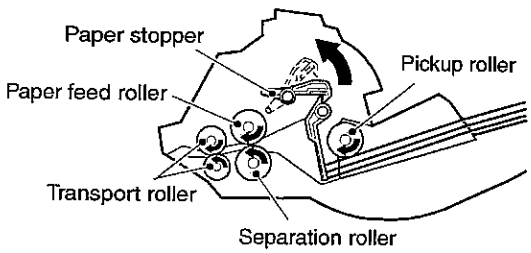
The paper pickup roller moves up and down to press paper and separates the top paper, which is fed to the paper feed roller.

The paper feed roller feeds paper to the paper transport section. The separation roller prevents against double feed.

The manual paper feed clutch controls ON/OFF of the pickup roller and the paper feed roller.

The manual transport roller transports paper to the resist roller.



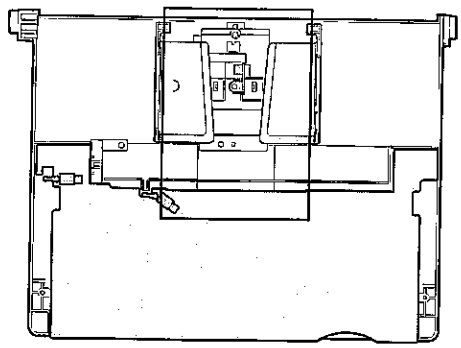


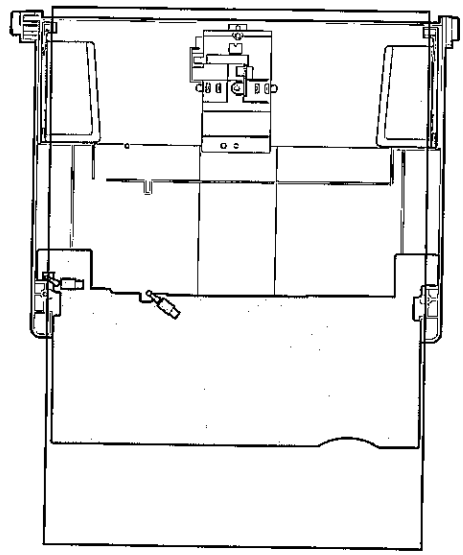
The paper size is detected by the paper length detector and the paper width sensor.

A volume-type sensor is used as the paper width sensor. The resistance varies according to variation of the paper guide position to detect the paper width.

The tray position detector detects that the paper tray is set to the maximum length position or to the minimum length position.

When the paper tray is set to the maximum length position, the paper length detector is forcibly turned ON. This is to recognize it.

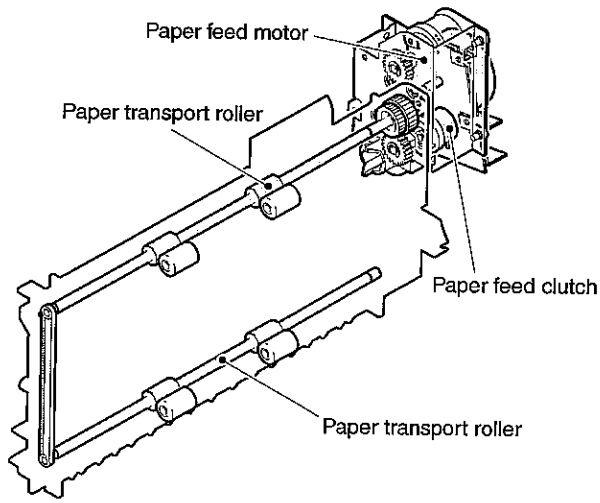




c. Paper transport section

This section transports paper from each paper feed section to the transfer section (resist roller) by two transport rollers.

The paper transport clutch controls ON/OFF of each transport roller.

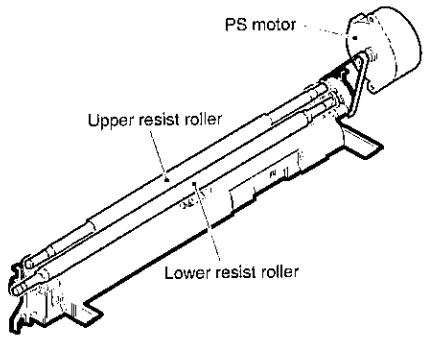


d. Paper resist section

The resist roller controls the relative position of the transported paper and the transfer image.

The resist roller is driven by the resist roller motor.

The relative position of paper and the transfer image is determined by the ON timing of the resist roller motor.



e. Others

* The paper transport section is provided with two paper detectors, which perform the following functions:

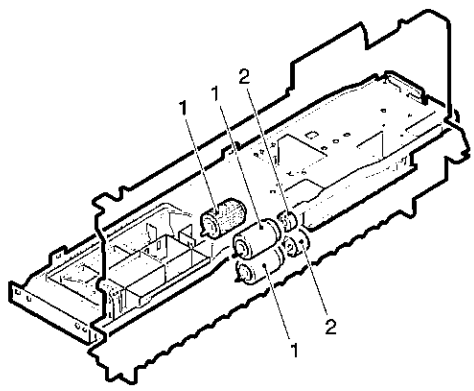
1) Paper jam detection
2) Output of the reference signal for the operating timing of each load

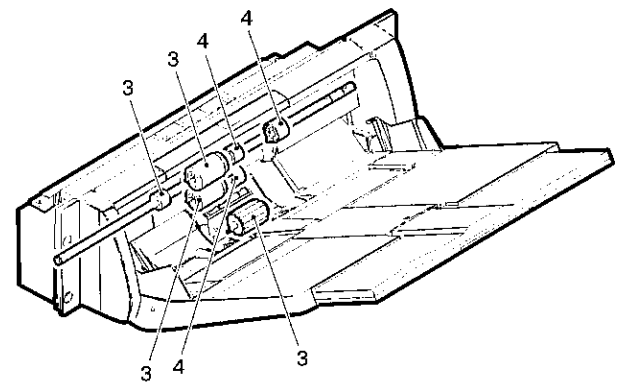
B. Disassembly/assembly/maintenance

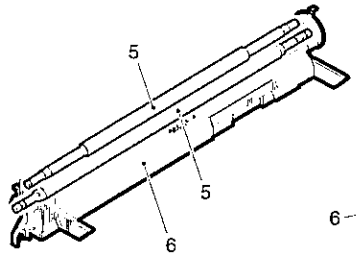
(1) Paper feed/transport sections maintenance target parts

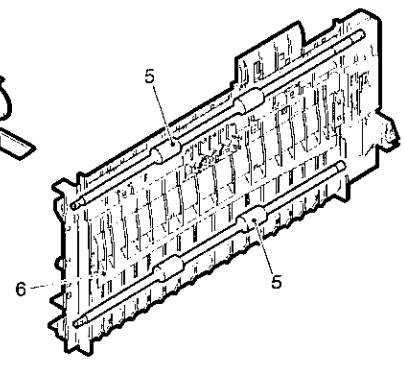
×: Check (Clean, replace, or adjust as necessary.) ○: Clean ▲: Replace △: Adjust ☆: Lubricate ❑: Shift position

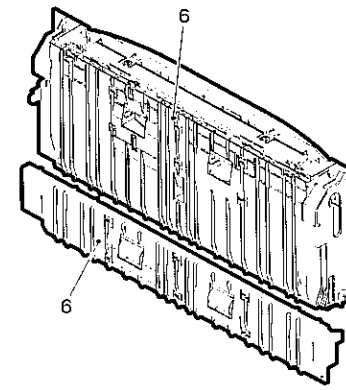
Unit name	No.	Part name	When calling	50K	100K	150K	200K	250K	300K	350K	400K	Remark
Paper feed section	1	Paper feed rollers in the cassette section	○	○	×	○	×	○	×	○	×	Replace at the specified count at each paper feed port or within 2 years.
	2	Torque limiter	×		×		×		×		×	
	3	Paper feed rollers in the manual paper feed section	○	×	×	×	×	×	×	×	×	Replace at the specified count at each paper feed port or within 2 years.
	4	Torque limiter	×	×	×	×	×	×	×	×	×	
Transport section	5	Transport rollers	○	○	○	○	○	○	○	○	○	
	6	Transport paper guide	○	○	○	○	○	○	○	○	○	









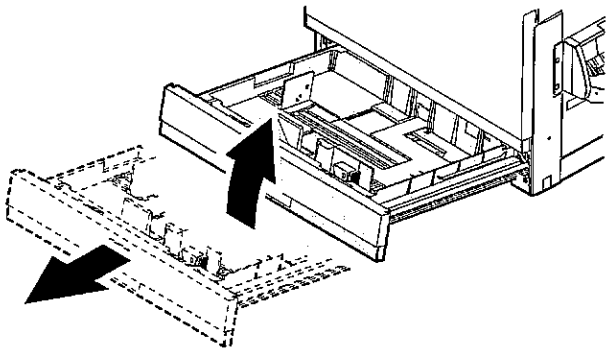


(2) Maintenance parts and major parts replacement

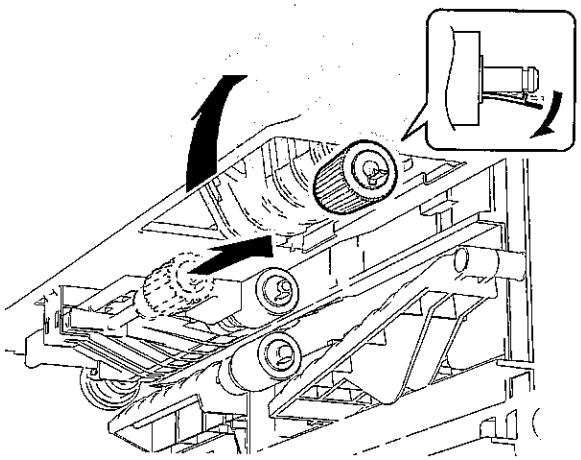
a. Cassette paper feed

<1> Pickup roller

1) Remove the cassette.



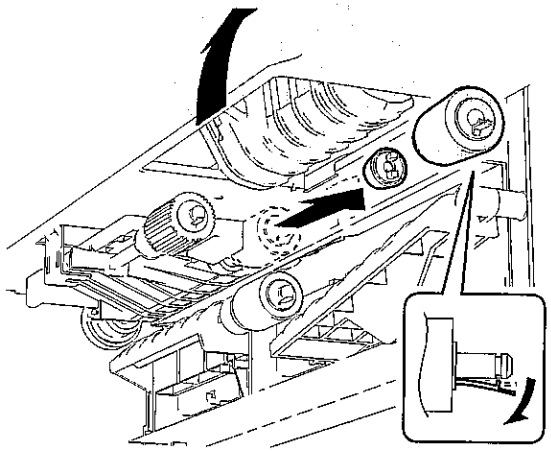
2) Disengage the pawl, and remove the pickup roller.



Note: Do not remove the transfer belt unit.

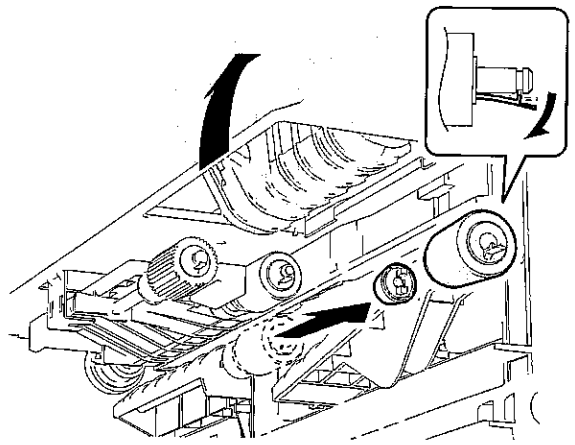
<2> Paper feed roller, torque limiter

1) Remove the cassette.
2) Disengage the pawl, and remove the paper feed roller.



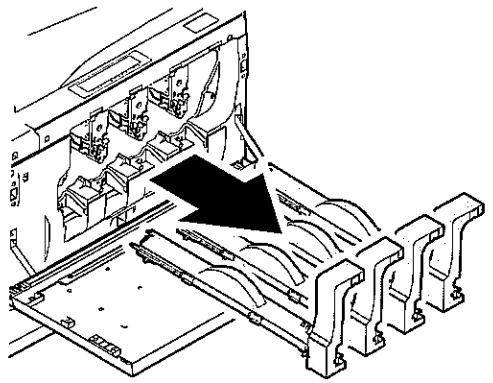
<3> Paper separation roller, torque limiter

1) Remove the cassette.
2) Disengage the pawl, and remove the paper separation roller.

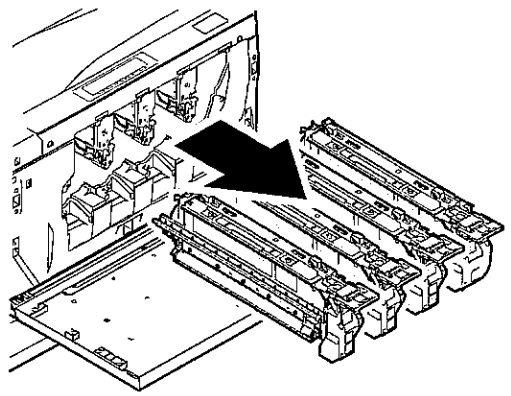


<4> Cassette paper feed unit

1) Open the front cabinet, and remove the drum unit.

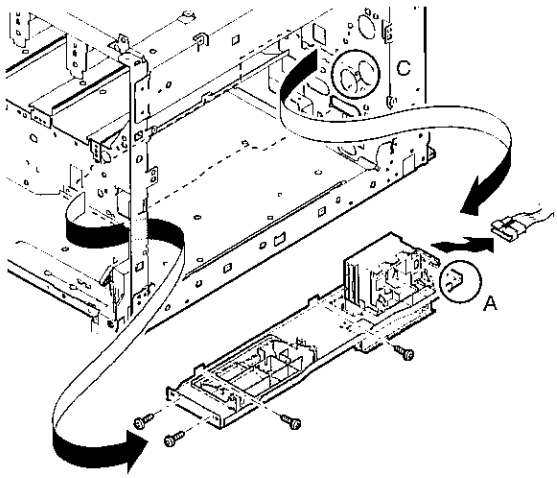


2) Remove the developing unit.



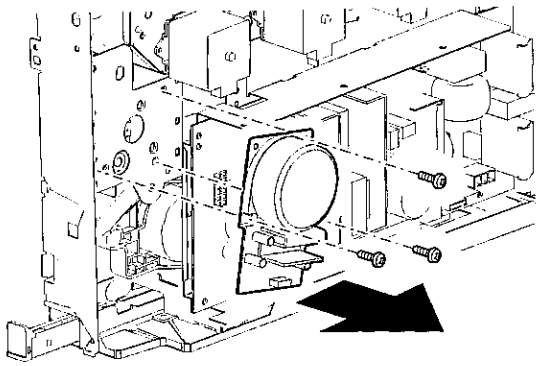
3) Remove the front cabinet and the front frame cover.
4) Remove the mulli manual paper feed unit.
5) Remove the rear cabinet and the rear right cabinet.
6) Remove the screw and the paper feed unit. Remove the connector.

* When assembling, fit the positioning pin A with section C.



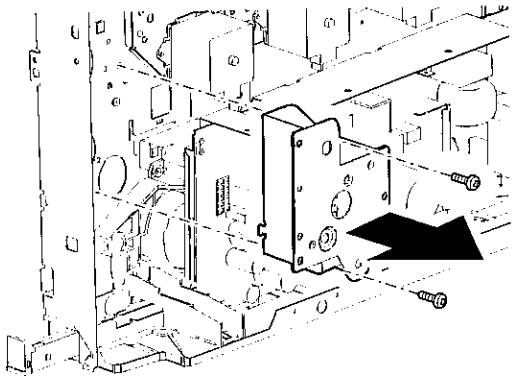
<5> Paper feed drive motor

1) Remove the screw, the rear cabinet and the rear right cabinet.
2) Remove the screw, and remove the paper feed drive motor.



<6> Paper feed drive unit

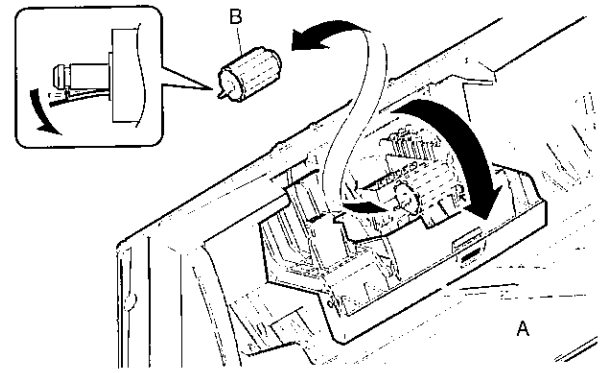
1) Remove the harness and the screw, and remove the paper feed drive unit.



b. Multi manual paper feed

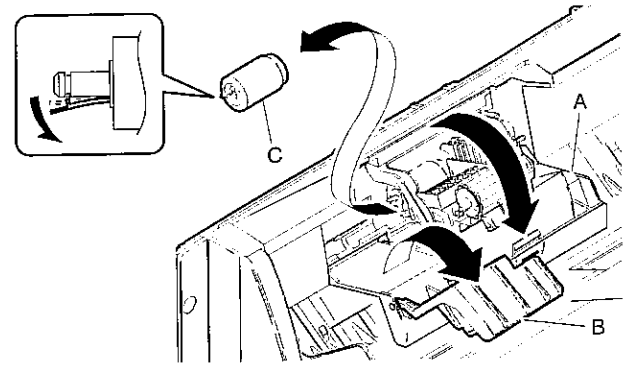
<1> Pickup roller

1) Open the arm cover (A). Disengage the pawl, and remove the pickup roller (B).



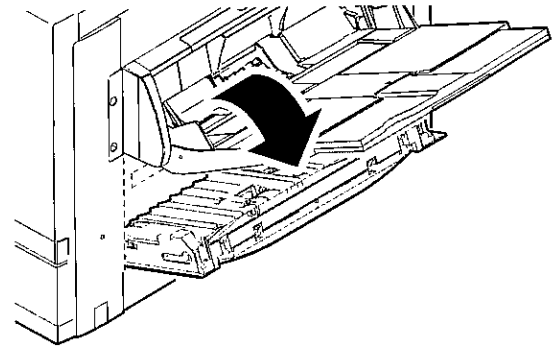
<2> Paper feed roller

1) Open the arm cover (A), open the auxiliary PG (B), and remove the paper feed roller (C).

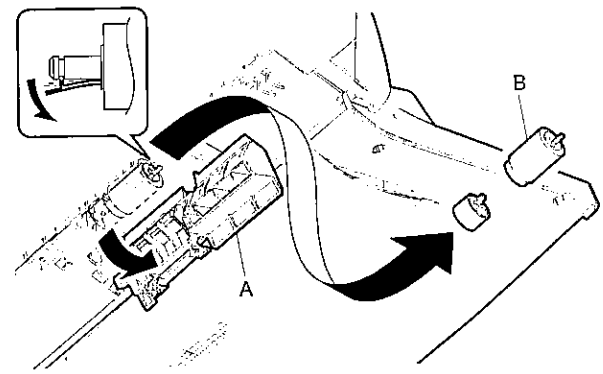


<3> Paper separation roller

1) Open the vertical transport guide.

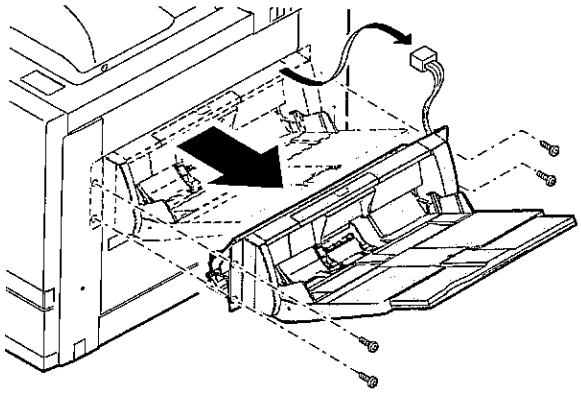


2) Open the maintenance cover (A) from the bottom of the multi paper feed unit. Disengage the pawl and remove the paper feed separation roller (B).



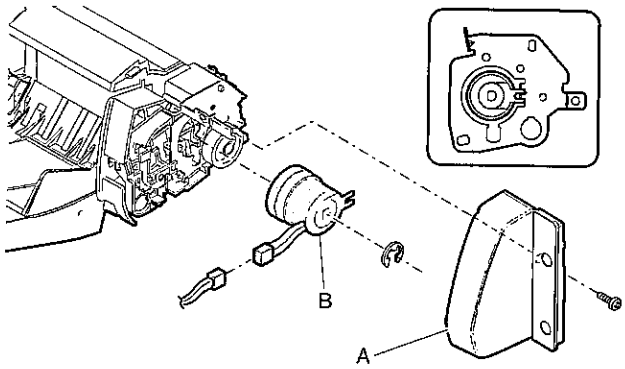
<4> Multi manual paper feed unit

1) Remove the screw and the harness, and remove the multi paper feed unit.



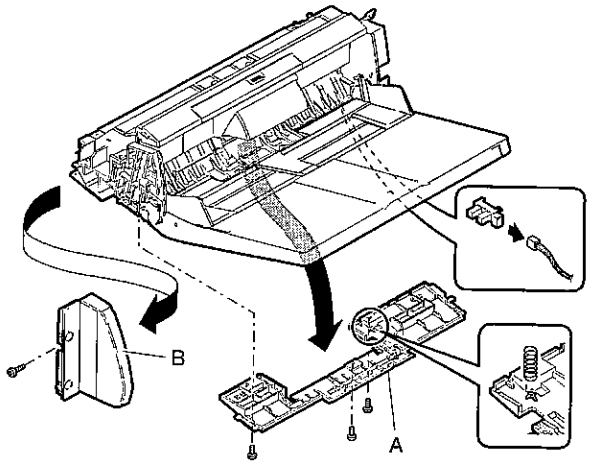
<5> Paper feed clutch

1) Remove the screw and the cover (A). Remove the connector and the E-ring, and remove the paper feed clutch (B).



<6> Transport roller

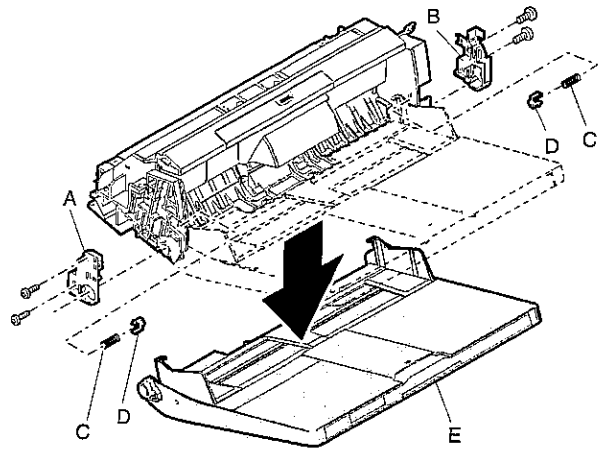
1) Remove the bottom lid (A), remove the connector and the screw, and remove the cover (B).



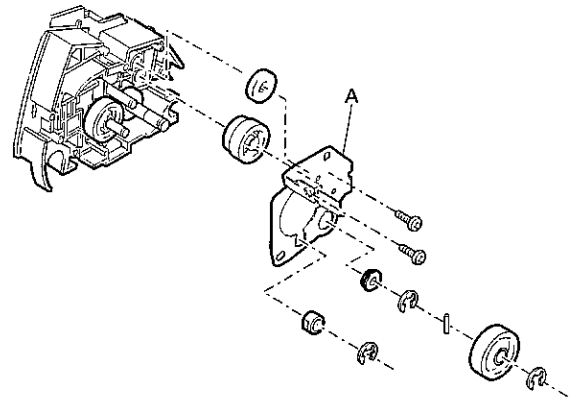
* When assembling, fit the cover projection with the spring.

2) Remove the screw, and remove (A) and (B).

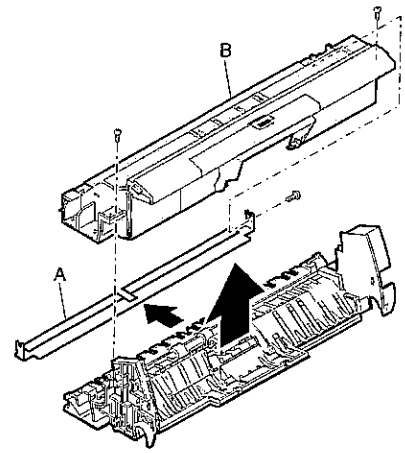
* When assembling, first attach (A), then attach (C) and (D).



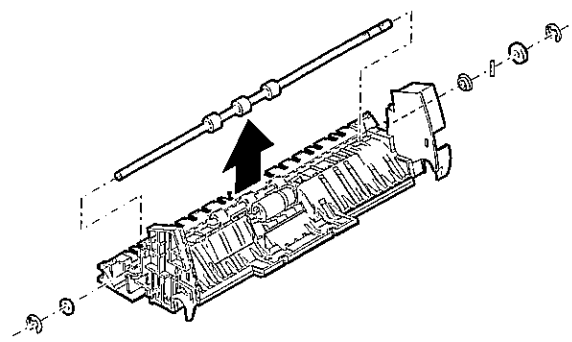
3) Remove the screw and the E-ring, and remove the angle (A) and the gear.



4) Remove the screw, and remove (A) and the manual upper unit (B).



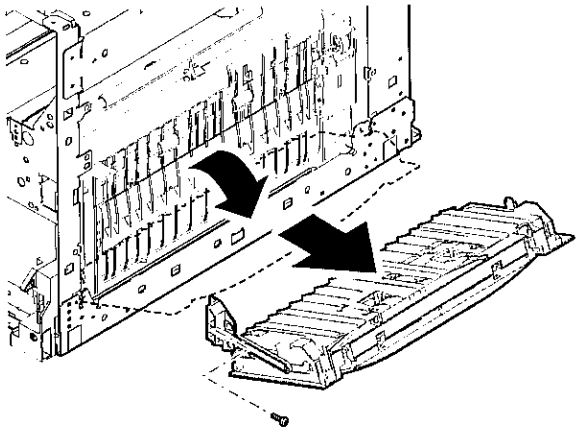
5) Remove the E-ring, the gear, and the bearing, and remove the transport roller.



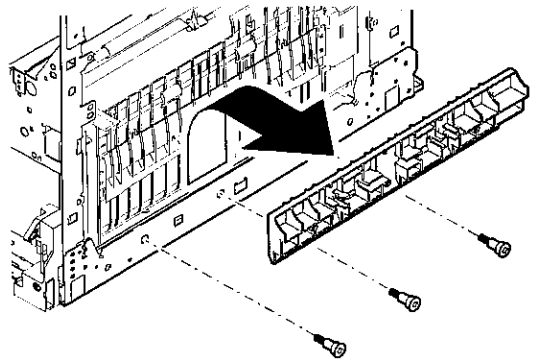
c. Transport section

<1> Vertical transport unit

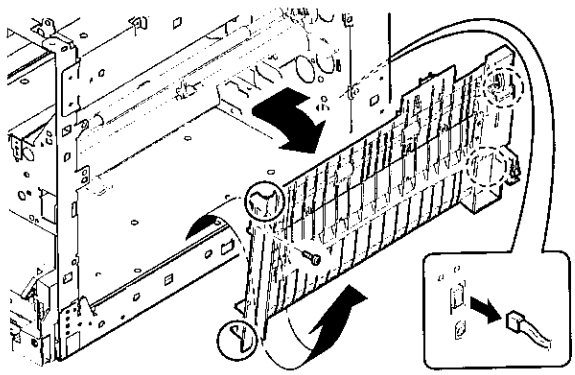
1) Remove the drum and the developing unit.
2) Remove the front cabinet.
3) Remove the front frame cover.
4) Remove the multi manual paper feed unit.
5) Remove the rear cabinet, the rear right cabinet, the front right cabinet, and the right lower cabinet.
6) Open the vertical transport guide. Remove the screw and remove the vertical transport guide unit.



7) Remove the screw, and remove the vertical transport lower unit.

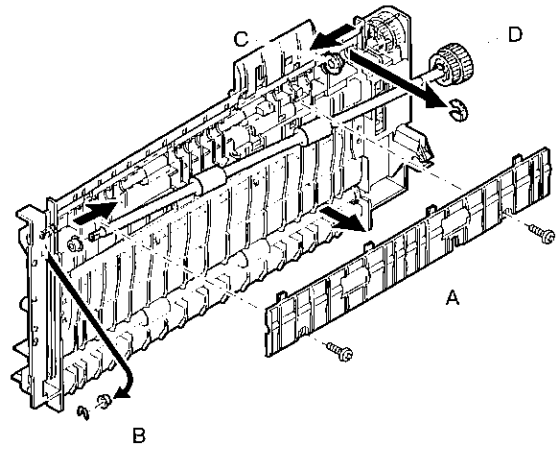


8) Remove the paper feed drive motor, and remove the connector on the rear side. Remove the screw, and shift the vertical transport unit to the left to remove.
   * When assembling, engage the four bosses indicated with ○ in the figure below.

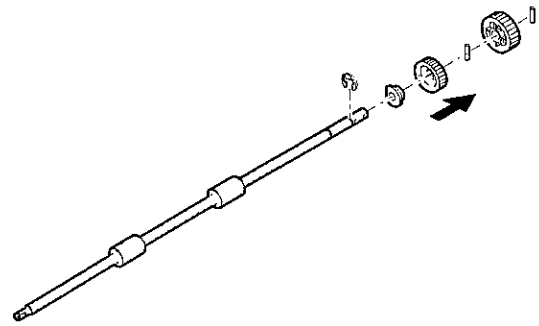


<2> Transport roller 2

1) Remove the vertical transport unit.
2) Remove the screw, and remove the paper guide (A).
3) Remove the resin ring, and remove the pulley (B) from the belt.
4) Remove the resin E-ring, slide the bearing (C), and remove the transport roller 2 unit (D).

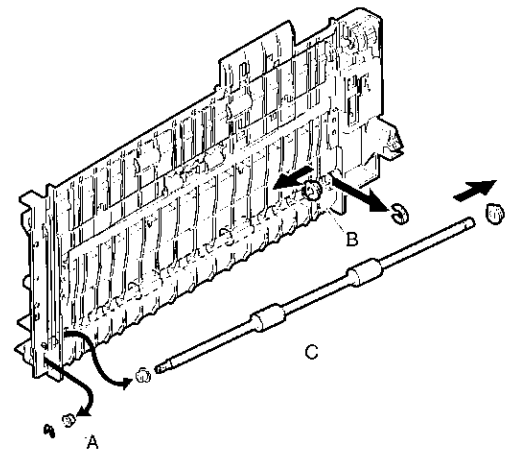


5) Remove the E-ring and parts, and remove the transport rollers.



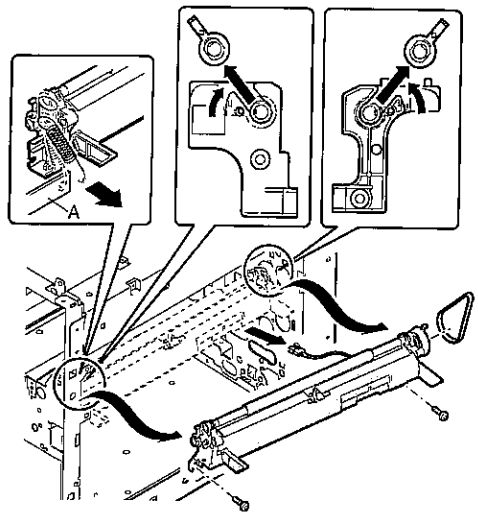
<3> Transport roller 1

1) Remove the vertical transport unit.
2) Remove the resin ring. Remove the pulley (A) from the belt.
3) Remove the resin E-ring, slide the bearing (B), and remove the transport roller 1 (C).



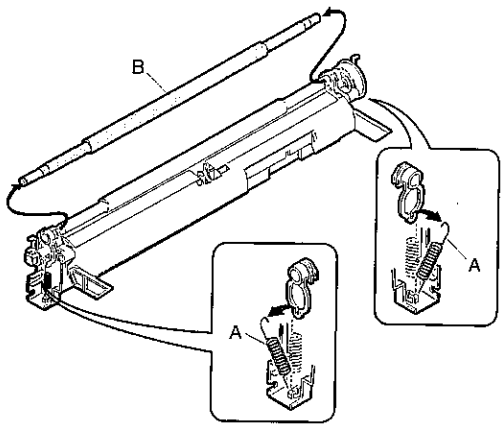
<4> PS unit

1) Remove the vertical transport unit.
2) Remove the screw and the spring. Release the lock. Remove the belt and remove the PS unit.
   * When assembling, attach from the left with avoiding the plate in section A.



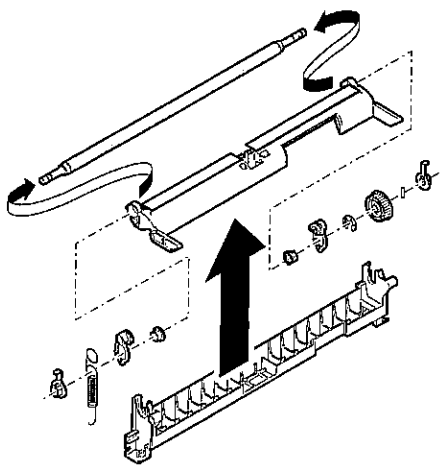
<5> Upper resist roller

1) Remove the vertical transport unit.
2) Remove the PS unit.
3) Remove the spring (A), and remove the upper resist roller (B).



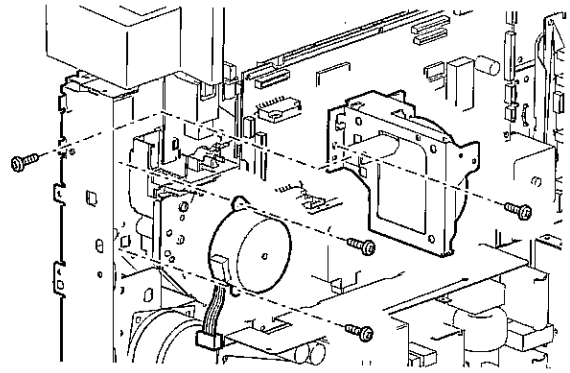
<6> Lower resist roller

1) Remove the vertical transport unit.
2) Remove the PS unit.
3) Remove the upper resist roller.
4) Remove the parts and remove the lower resist roller.



<7> PS motor

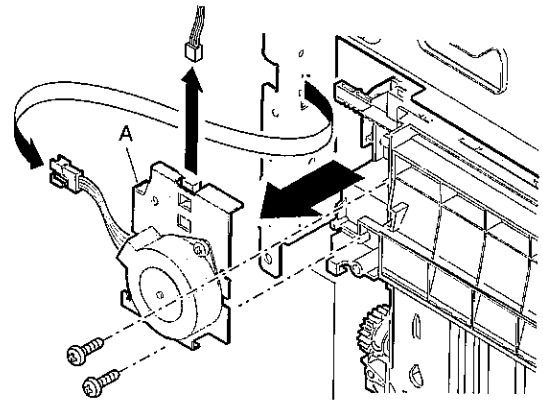
1) Remove the rear cabinet and the rear right cabinet.
2) Remove the connector and the screw, and remove the process exhaust fan unit. Remove the connector and the screw, and remove the PS motor.



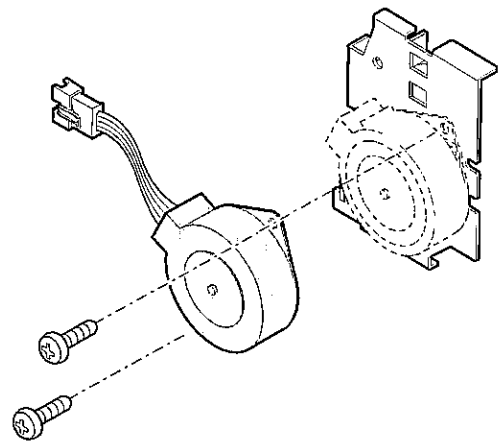
d. Paper exit section

<1> Slide drive motor

1) Open the left cabinet.
2) Remove the connector and the screw, and remove the motor unit.

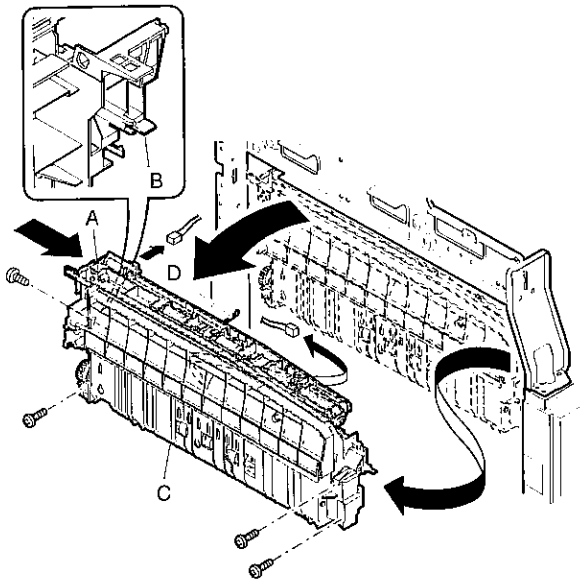


3) Remove the connector and the screw, and remove the motor (A).



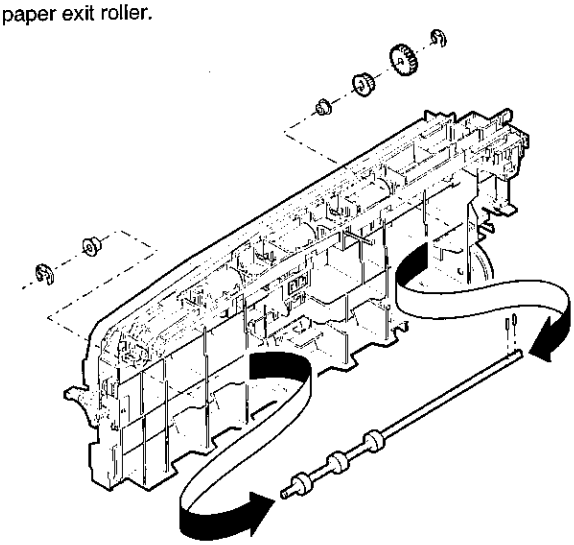
<2> FD paper exit unit

1) Remove the rear cabinet, the rear cabinet upper, the left cabinet, the rear left cabinet lid, the rear left cabinet, and the front cabinet upper.
2) Remove the motor unit.
3) Slide section (A) to the front side. Remove the screw, and disengage the pawl in section (B). Remove the FD paper exit unit (C) from the rear side and remove the connector.
   - When assembling, attach from the front side.
   - When assembling, be careful not to damage the actuator (D).



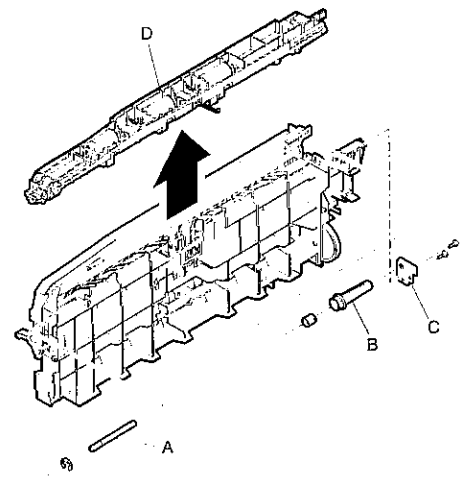
<3> FD paper exit roller B

1) Remove the cabinet.
2) Remove the paper exit unit.
3) Remove the E-ring, the bearing, and the gear. Remove the FD paper exit roller.

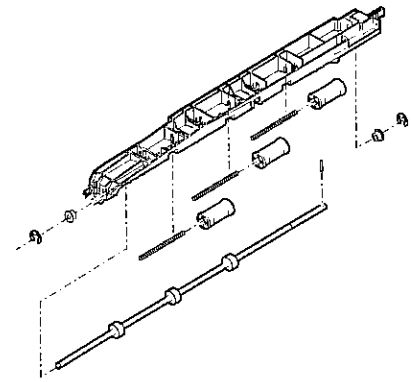


<4> FD paper exit roller A

1) Remove the cabinet.
2) Remove the paper exit unit.
3) Remove the E-ring, (A), the screw, (B), (C), and the bearing. Remove the unit (D).

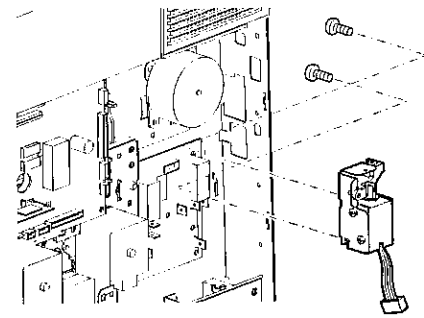


4) Remove the E-ring and the bearing, and remove the FD paper exit roller (A).



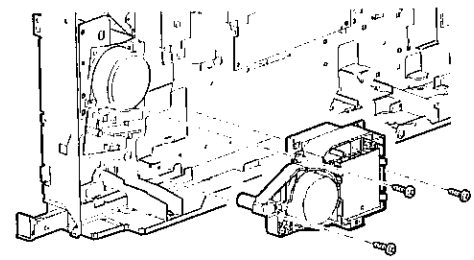
e. Gate solenoid unit

1) Open the left door, and remove the rear cabinet and the rear left cabinet.
2) Remove the driver PWB unit.
3) Remove the connector and the screw, and remove the gate solenoid unit.

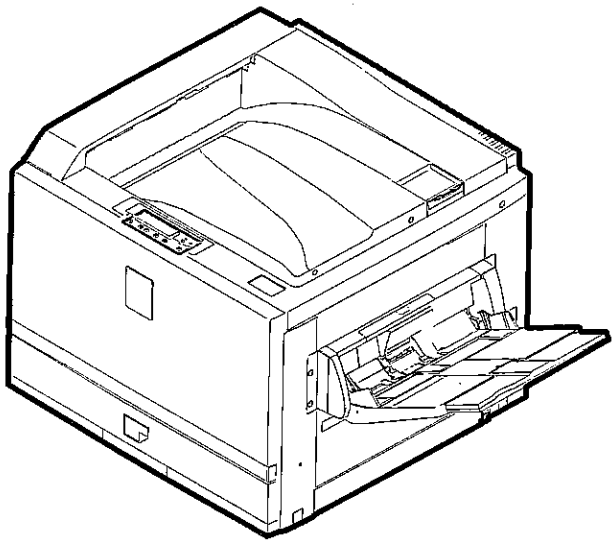


f. Lift-up unit

1) Remove the rear cabinet and the rear right cabinet.
2) Remove the power PWB unit.
3) Remove the connector and the screw, and remove the lift-up unit.



5. Operation panel

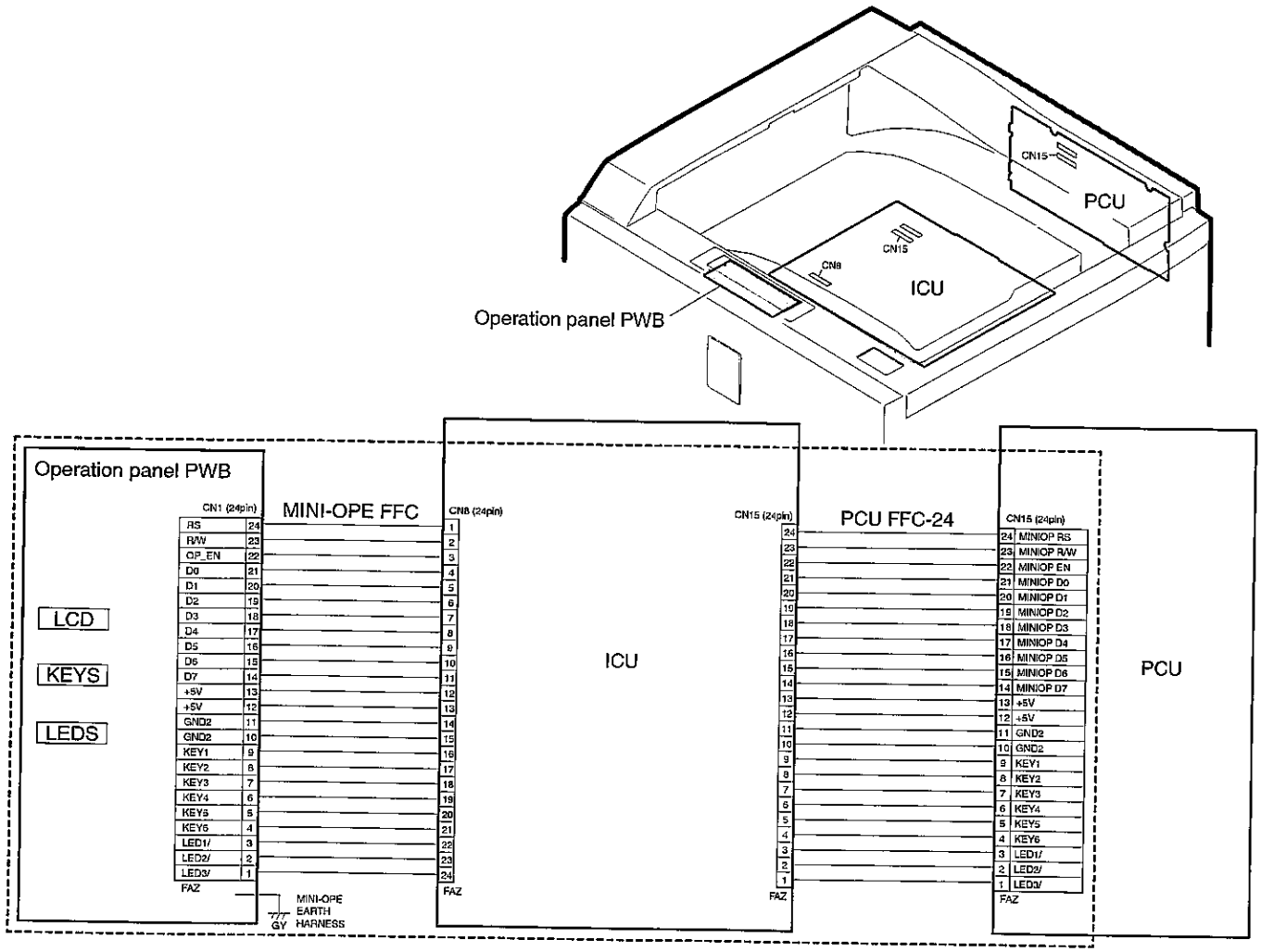


A. Operational descriptions

(1) Outline

There are three LED's, six keys, and an LCD on the operation PWB of the operation panel unit, which are used for machine operation and machine status display.

(2) Electrical section and mechanical section



(3) major parts functions and operations

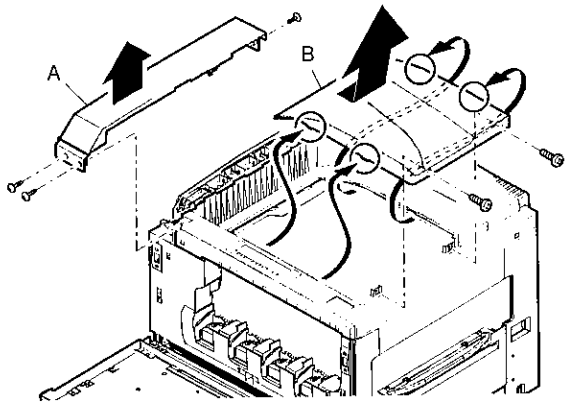
No.	Name	Code, signal name	Function
RW	Operation panel PWB	—	Machine operation and status display.

RW: Abbreviation of Related Wiring, which means the said load is specified in the related figure of the mechanical and the electrical sections.

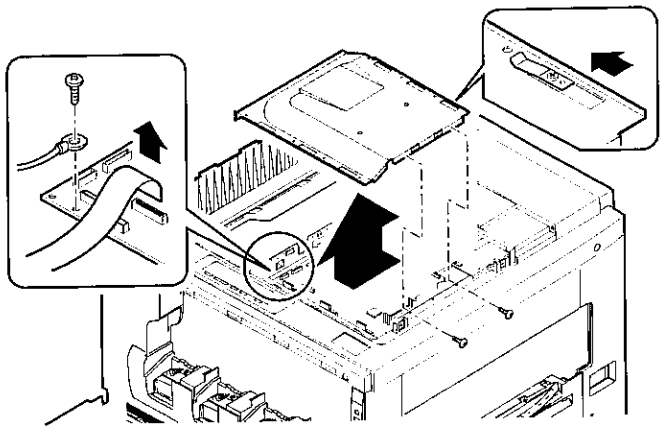
B. Disassembly/assembly/maintenance

a. Operation panel PWB

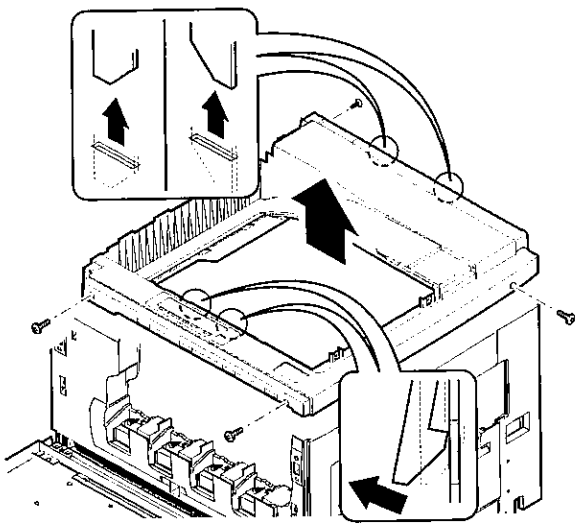
1) Remove the screws, and remove the FD paper exit port cabinet (A). Remove the screws, and remove the paper exit tray cabinet right (B).



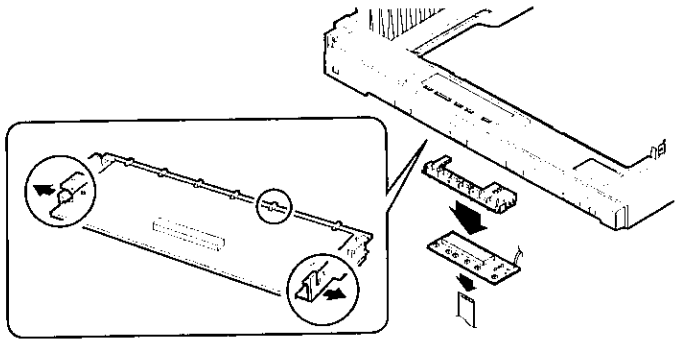
2) Remove the screws, and remove the box cover. Remove the screw and remove the earth terminal. Remove the harness.



3) Remove the screws, and remove the paper exit tray cabinet.



4) Release the pawl on the back surface of the paper exit tray cabinet, and remove the operation panel PWB.

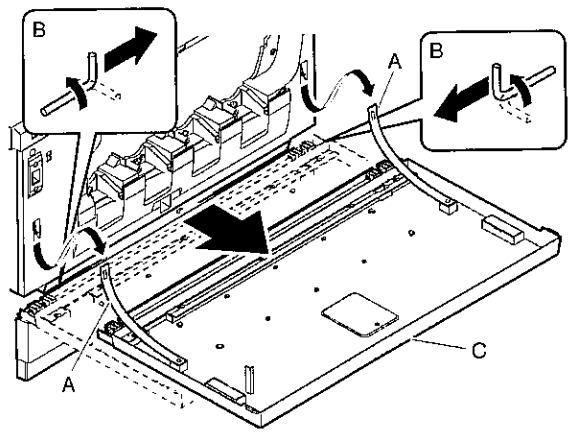


6. External fitting

A. Disassembly

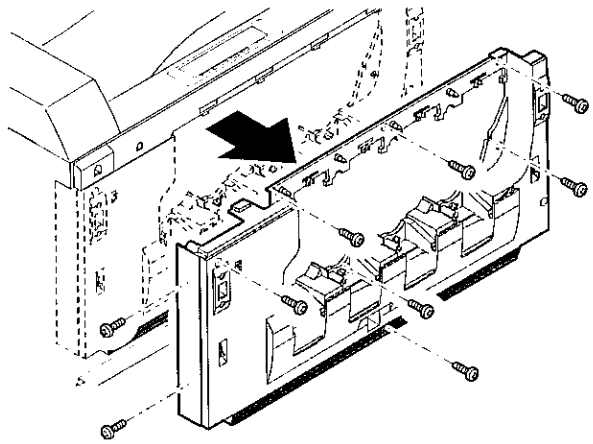
(1) Cabinet disassembly 1

1) Open the front cabinet.
2) Remove the front cabinet band. Pull out the slide pin (B), and remove the front cabinet (C).



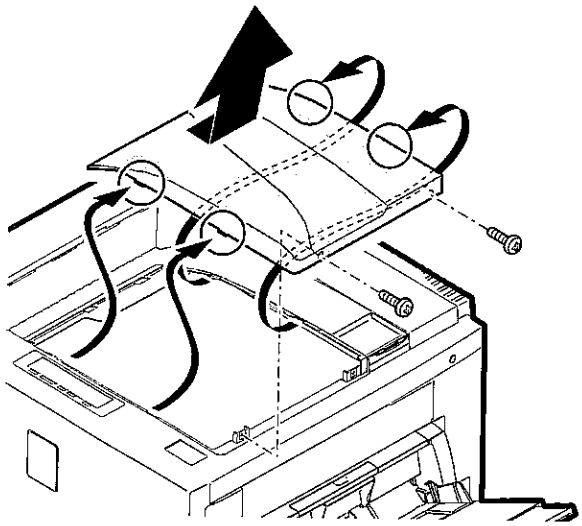
(2) Cabinet disassembly 2

1) Remove the front cabinet.
2) Open the left cabinet. Remove the screw and remove the front frame cover.



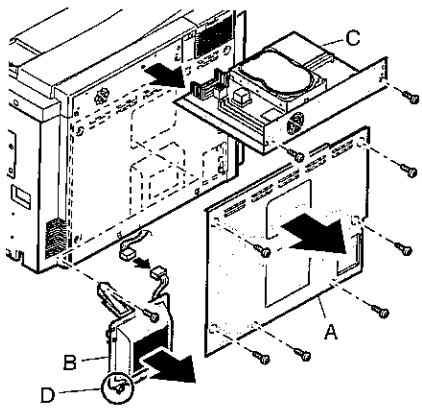
(3) Cabinet disassembly 3

1) Remove the screw, and slide the paper exit tray cabinet right to the right to remove.



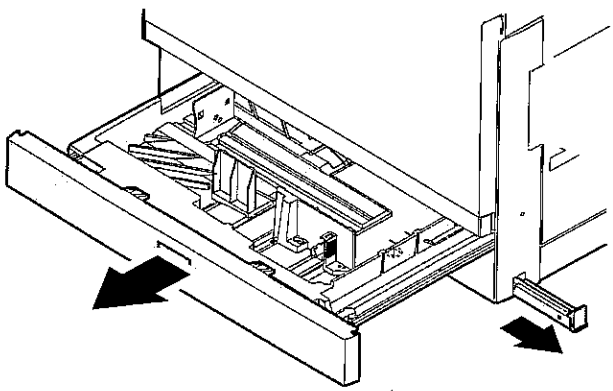
(4) Cabinet disassembly 4

1) Remove the screw, and remove the rear cabinet (A). Remove the screw, and remove the DC power CFM unit (B) and the connector.
   Remove the screw, and remove the printer controller unit.
   * When assembling, insert the boss in section D into the hole in the frame.

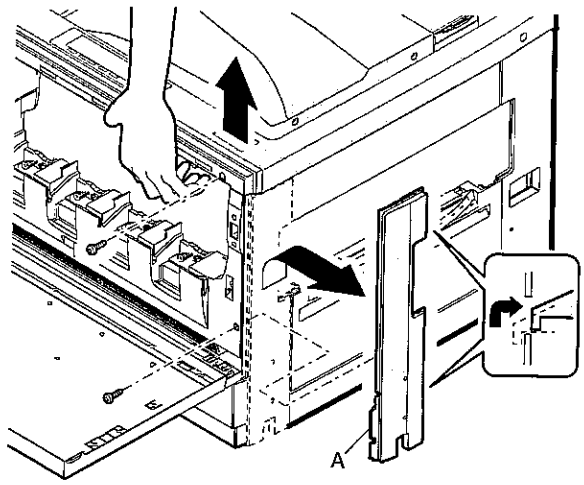


(5) Cabinet disassembly 5

1) Remove the manual paper feed unit.
2) Pull out the cassette and the knob.

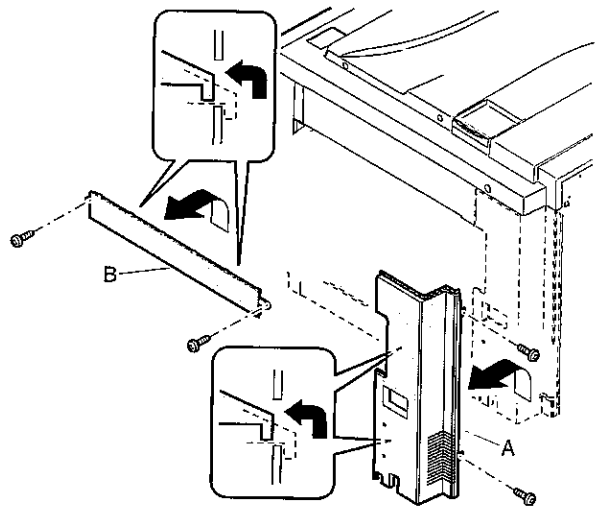


3) Open the front cabinet.
4) Remove the screw.
5) Lift the cabinet, and slide and remove the front right cabinet (A) upward.



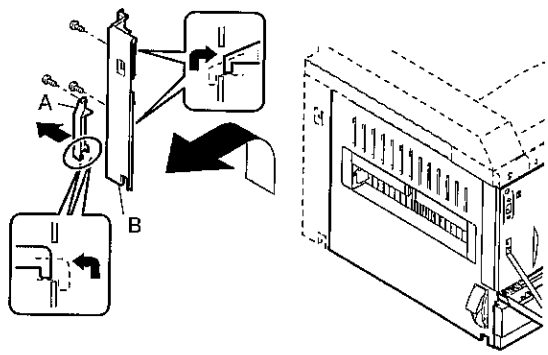
(6) Cabinet disassembly 6

1) Remove the rear cabinet.
2) Remove the manual paper feed unit.
3) Remove the front right cabinet.
4) Remove the screws, and slide and remove the rear right cabinet (A) upward.
5) Remove the screws, and slide and remove the right lower cabinet (B) upward.



(7) Cabinet disassembly 7

1) Remove the rear cabinet.
2) Remove the screws, and slide and remove the rear left cabinet cover (A) and the rear left cabinet (B) upward.



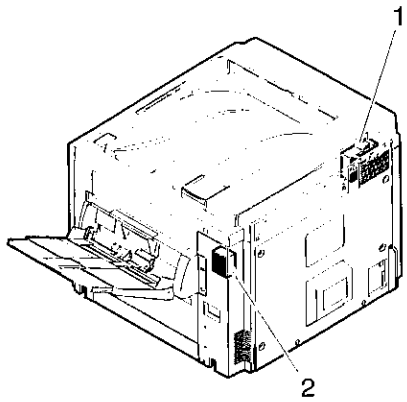
7. Others

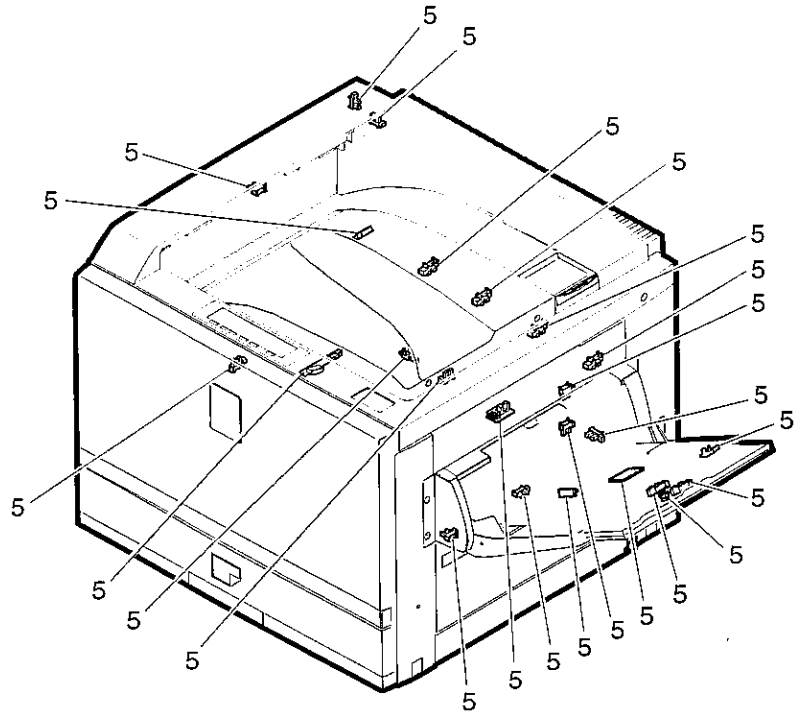
A. Disassembly/assembly/maintenance

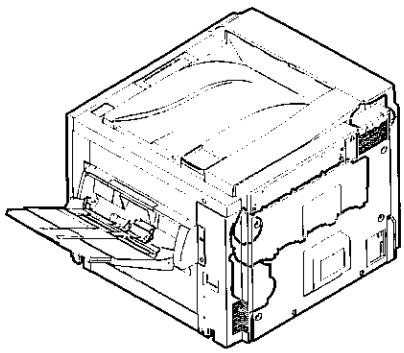
(1) Maintenance target parts

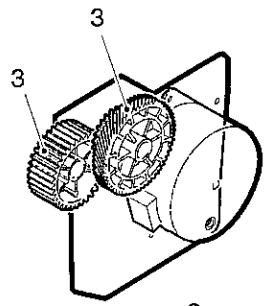
X: Check (Clean, replace, or adjust as necessary.) ○: Clean ▲: Replace △: Adjust ☆: Lubricate ❑: Shift position

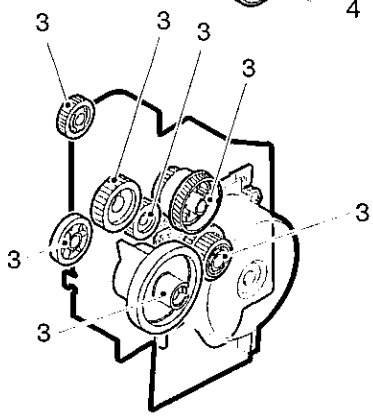
Unit name	No.	Part name	When calling	50K	100K	150K	200K	250K	300K	350K	400K	Remark
Filters	1	Ozone filter	×	▲	▲	▲	▲	▲	▲	▲	▲	
	2	Sub ozone filter	×	▲	▲	▲	▲	▲	▲	▲	▲	
Drive section	3	Gears	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	4	Belts	×	×	×	×	×	×	×	×	×	
Others	5	Sensors	×		×		×		×		×	

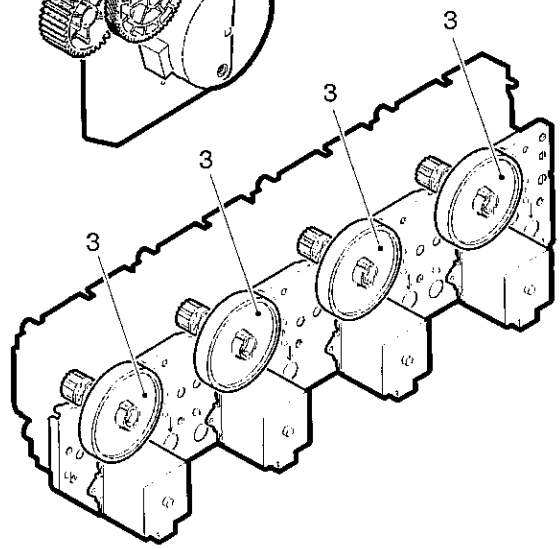


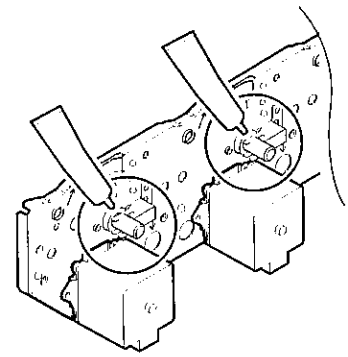








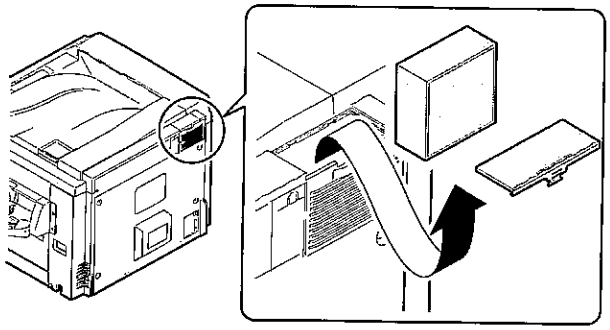




(2) Maintenance parts and major parts replacement

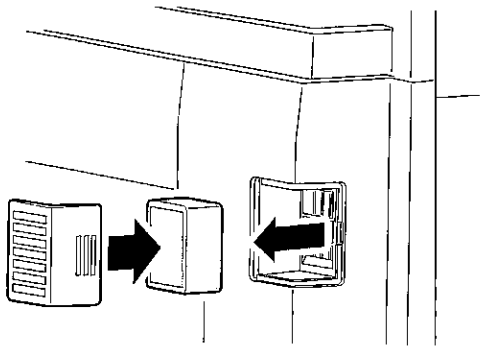
a. Ozone filter

1) Remove the ozone filter cover, and remove the ozone filter.



b. Sub ozone filter

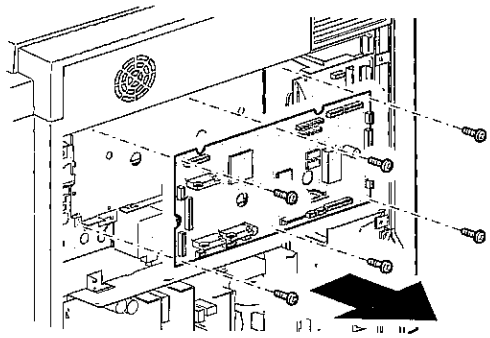
1) Remove the sub ozone filter cover, and remove the sub ozone filter.



c. PWB

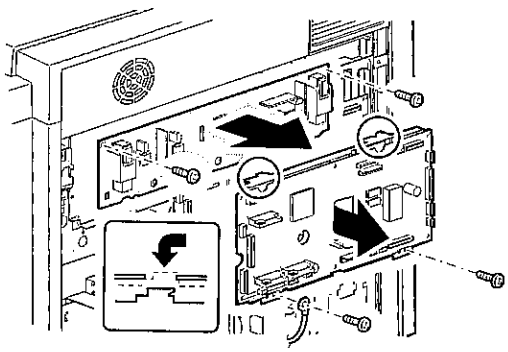
<1> PCU PWB

1) Remove the rear cabinet.
2) Remove the connector and the screw, and remove the PCU PWB.



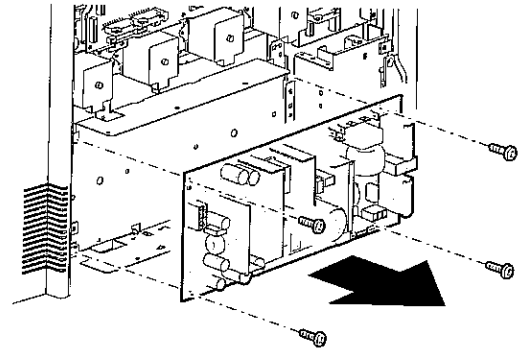
<2> High voltage MC power PWB

1) Remove the rear cabinet.
2) Remove the connector, the screw, and the earth wire (commonly fixed), and remove the PCU PWB unit.
3) Remove the connector and the screw, and remove the high voltage MC power PWB.



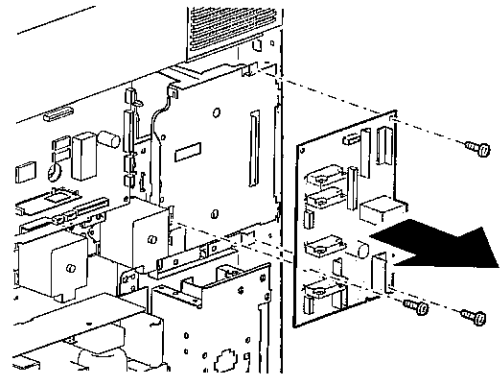
<3> Power PWB

1) Remove the rear cabinet and the DC power CFM unit.
2) Remove the connector and the screw, and remove the power PWB.



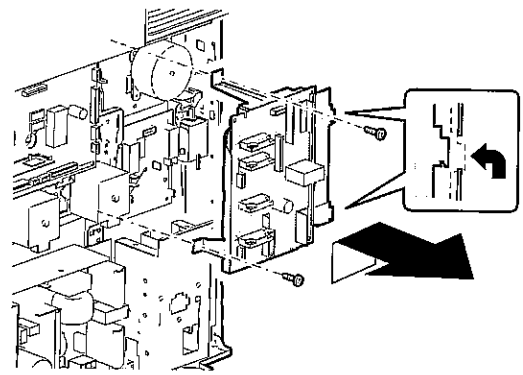
<4> Driver PWB

1) Remove the rear cabinet, the rear left cabinet lid, and the rear left cabinet.
2) Remove the screw and the connector, and remove the driver PWB.

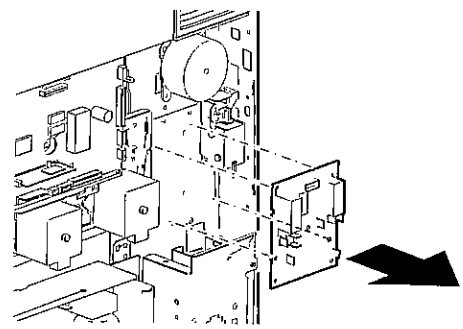


<5> AC PWB

1) Remove the screw, the rear cabinet, the rear left cabinet lid, and the rear left cabinet.
2) Remove the screw and the harness, and remove the driver PWB unit.

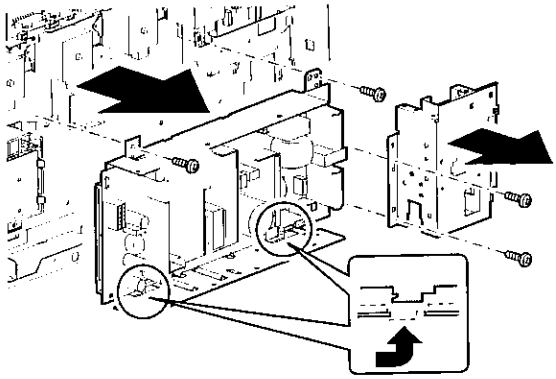


3) Remove the harness and remove the AC PWB from the supporter.

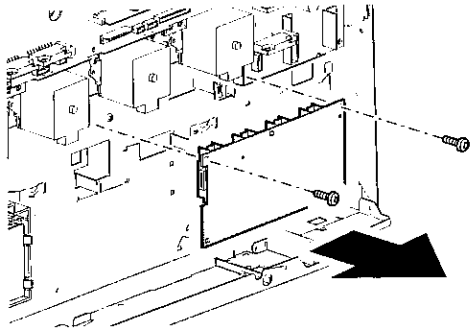


<6> High voltage TC power PWB

1) Remove the rear cabinet, the DC power CFM unit, the rear left cabinet lid.
2) Remove the connector, the harness, and the screw. Remove the Power PWB unit.

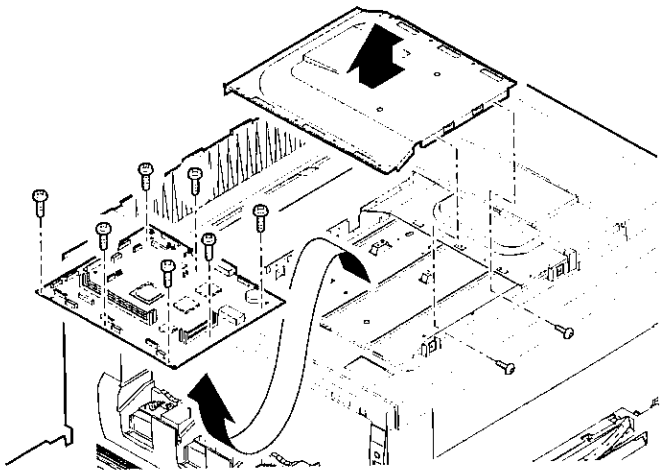


3) Remove the connector and the screw, and remove the high voltage TC power PWB.



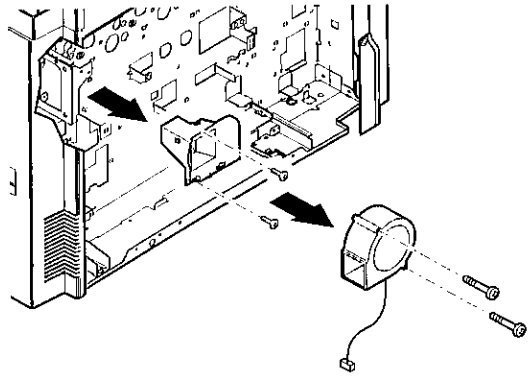
<7> ICU PWB

1) Remove the paper exit tray cabinet right.
2) Remove the screw, and remove the box cover. Remove the screw, and remove the ICU PWB.

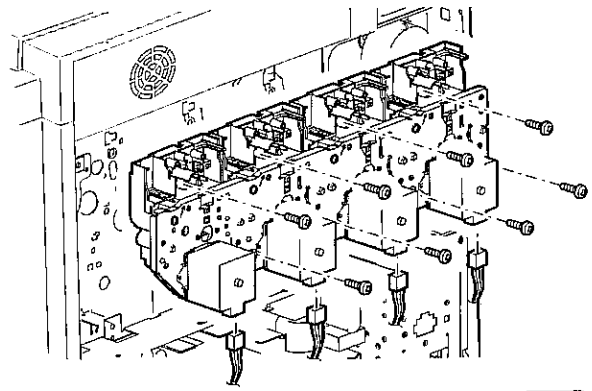


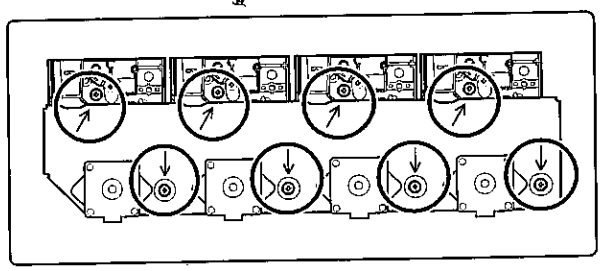
<8> Drum drive unit

1) Remove the rear cabinet.
2) Remove the DC power CFM unit.
3) Remove the driver PWB unit.
4) Remove the PCU PWB unit.
5) Remove the screw and the connector, and remove the intake duct FAN.
6) Remove the screw and the intake duct.



7) Remove the high voltage MC PWB.
8) Remove the connector screw and the drum drive unit.
   * Remove the eight screws which are indicated with an arrow mark on the plate drive frame and are fixing the resin drive frame.
   (Never remove the screws which are fixing the plate drive frame upper.)





[8] SETTING AND ADJUSTMENTS

Each adjustment item in the adjustment item list is indicated with its JOB number.
Perform the adjustment procedures in the sequence of Job numbers from the smallest to the greatest.
However, there is no need to perform all the adjustment items. Perform only the necessary adjustments according to the need.
Unnecessary adjustments can be omitted. Even in this case, however, the sequence from the smallest to the greatest JOB number must be observed.
If the above precaution should be neglected, the adjustment would not complete normally or a trouble may occur.

JOB No	ADJUSTMENT ITEM LIST			SIMULATION
ADJ 1	High voltage adjustment	ADJ 1A	Main charger grid voltage adjustment	8-2
		ADJ 1B	DV bias voltage adjustment	8-1
		ADJ 1C	Transfer voltage adjustment	8-6
ADJ 2	Image density sensor adjustment	ADJ 2A	Color image density sensor adjustment (adjustment by the adjustment jig)	44-13
		ADJ 2B	Black image density sensor adjustment	44-2
		ADJ 2C	Color image density sensor & black image density sensor adjustment (Simple adjustment) *1	44-36
ADJ 3	Image focus, image skew adjustment (LED (writing) unit)			64-1/61-4
ADJ 4	Image registration adjustment	ADJ 4A	Image registration adjustment (Auto adjustment)	50-22
		ADJ 4B	Image registration adjustment (Manual adjustment)	50-20
ADJ 5	Image position/print area adjustment (Print engine section)	ADJ 5A	Main scanning direction image position adjustment (Print engine section)	50-10
		ADJ 5B	Sub scanning direction image position/print area adjustment (Print engine section)	50-5
ADJ 6	Fusing pressure adjustment			
ADJ 7	Fusing paper guide position adjustment			
ADJ 8	Manual paper feed tray paper size sensor adjustment			40-2
ADJ 9	Power voltage adjustment	ADJ 9A	3.4 V power voltage adjustment	
		ADJ 9B	5.0 V power voltage adjustment	
ADJ 10	Color balance adjustment			

*1: The simple adjustment does not use the adjustment jig. Its adjustment accuracy may be lower than that of the adjustment by using the adjustment jig under some machine conditions.

ADJ 1 High voltage adjustment

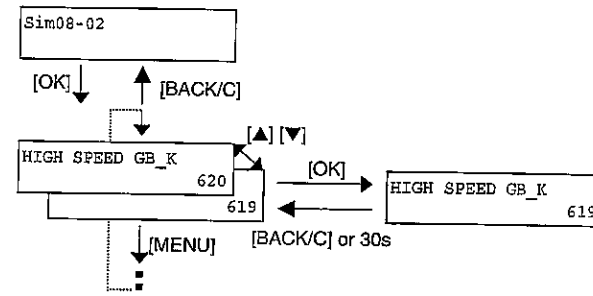
Since the output voltage cannot be checked directly due to the machine structure, the adjustment value of the simulation is set to the default (specified value) to perform the adjustment.

ADJ 1A Main charger grid voltage adjustment

This adjustment must be performed in the following cases:

- When the high voltage power PWB is replaced.
- When a U2 trouble occurs.
- When the PCU PWB is replaced.
- When the EEPROM of the PCU PWB is replaced.

1) Enter the SIM 8-2 mode.



2) Select the output mode to be adjusted with the [MENU] key.
3) Enter the adjustment value (specified value), and press the [OK] key.

   By entering the default value (specified value), the specified voltage is outputted.

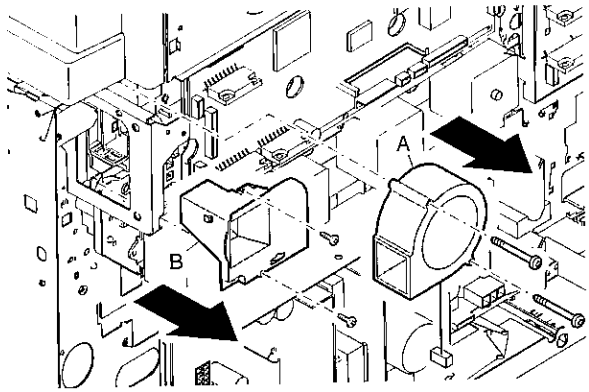
Item	Display item	Descriptions of item content	Set range	Default	Main charger grid voltage			
					Monitor (High voltage PWB)		Pin No.	Actual voltage
					Monitor voltage (Specified value)	Connector		
1	HIGH SPEED GB_K	K color charging/grid bias set value at high speed (140mm/s)	180 – 700	620	53.5 ± 0.2v	CNMONK	1	–620v
2	MIDDLE SPEED GB_K	K color charging/grid bias set value at the intermediate speed (117mm/s)	180 – 700	620	53.5 ± 0.2v	CNMONK	1	–620v
3	LOW SPEED GB_K	K color charging/grid bias set value at the low speed (58.5mm/s)	180 – 700	590	50.6 ± 0.2v	CNMONK	1	–590v
4	MIDDLE SPEED GB_C	C color charging/grid bias set value at the intermediate speed (117mm/s)	180 – 700	620	53.5 ± 0.2v	CNMON	3	–620v
5	LOW SPEED GB_C	C color charging/grid bias set value at the low speed (58.5mm/s)	180 – 700	590	50.6 ± 0.2v	CNMON	3	–590v
6	MIDDLE SPEED GB_M	M color charging/grid bias set value at the intermediate speed (117mm/s)	180 – 700	620	53.5 ± 0.2v	CNMON	7	–620v
7	LOW SPEED GB_M	M color charging/grid bias set value at the low speed (58.5mm/s)	180 – 700	590	50.6 ± 0.2v	CNMON	7	–590v

Item	Display item	Descriptions of item content	Set range	Default	Main charger grid voltage			
					Monitor (High voltage PWB)		Pin No.	Actual voltage
					Monitor voltage (Specified value)	Connector		
8	MIDDLE SPEED GB_Y	Y color charging/grid bias set value at the intermediate speed (117mm/s)	180 – 700	620	53.5 ± 0.2v	CNMON	11	–620v
9	LOW SPEED GB_Y	Y color charging/grid bias set value at the low speed (58.5mm/s)	180 – 700	590	50.6 ± 0.2v	CNMON	11	–590v

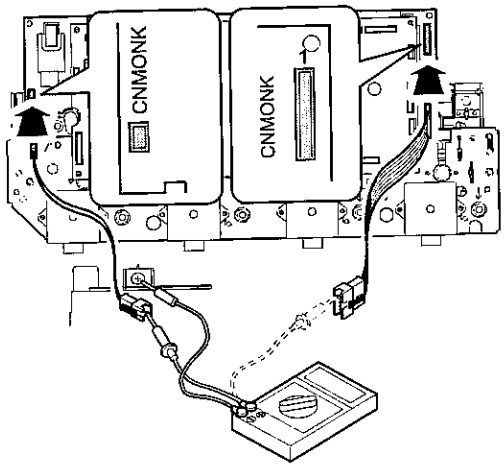
Actually it is of negative polarity and the actual output range is –180V to –700V.

Remark: When the default value is set, the specified voltage is outputted.
There is, therefore, no need to check the output voltage unless there is a doubt for any abnormality in the output voltage.
If there is a need to check that the normal voltage is outputted or to adjust by referring to the output voltage, use the method below.

1) Remove the rear cover of the machine.
2) Remove the image process fan motor and the duct.



3) Connect the high voltage adjustment harnesses (DHAi-3471FCZZ/ DHAi-3472FCZZ) with the connectors CNMON and CNMONK on the high voltage PWB.



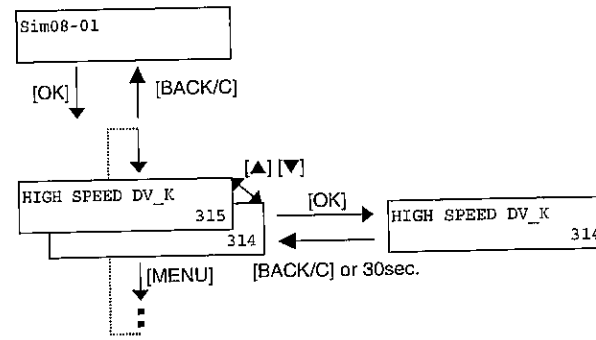
4) Enter the SIM8-2 mode.
5) Select the output mode to be adjusted with the [MENU] key.
6) Check that the pin numbers of the connectors CNMON and CNMONK are properly assigned to the connector pin numbers of the high voltage adjustment harness.
7) Apply a digital multi-meter to the connector pins of the high voltage adjustment harness corresponding to the output mode to be adjusted.
8) Press the [OK] key.
   The main charger grid voltage is outputted for 30sec.
   If this operation is performed for a long time, the OPC drum and the developing roller may be damaged. Be careful to perform this operation in a short time.
   It is advisable to install an unnecessary developing unit and unnecessary OPC drums to the machine for this adjustment.
9) Check the monitor voltage with the digital multi-meter.
   If the monitor voltage is not in the above specified range, change the adjustment value and adjust again. If the specified voltage is not obtained even by changing the adjustment value, the following parts may be judged as defective.
   High voltage PWB
   PCU PWB
   Developing unit
   Photoconductor unit
   High voltage circuit electrode

ADJ 1B DV bias voltage adjustment

This adjustment must be performed in the following cases:

- When the high voltage power PWB is replaced.
- When a U2 trouble occurs.
- When the PCU PWB is replaced.
- When the EEPROM of the PCU PWB is replaced.

1) Enter the SIM 8-1 mode.



2) Select the output mode to be adjusted with the [MENU] key.
3) Enter the adjustment value (specified value), and press the [OK] key.
   By entering the default value (specified value), the specified voltage is outputted.

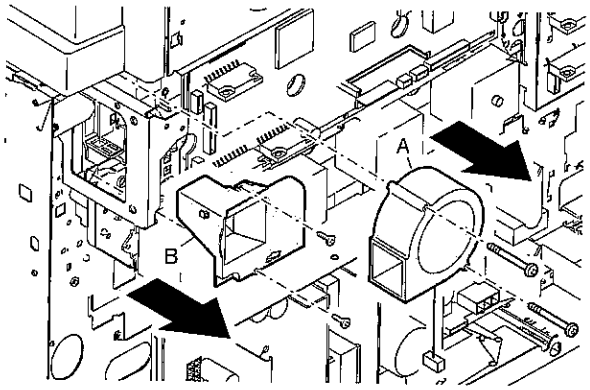
Item	Display item	Descriptions of item content	Set range	Default	Developing bias voltage			
					Monitor (High voltage PWB)		Pin No.	Actual voltage
					Monitor voltage (Specified value)	Connector		
1	HIGH SPEED DV_K	K color developing bias set value at high speed (140mm/s)	0 – 585	315	7.43 ± 0.1V	CNMONK	3	–315v
2	MIDDLE SPEED DV_K	K color developing bias set value at the intermediate speed (117mm/s)	0 – 585	315	7.43 ± 0.1V	CNMONK	3	–315v
3	LOW SPEED DV_K	K color developing bias set value at the low speed (58.5mm/s)	0 – 585	285	6.45 ± 0.1V	CNMONK	3	–285v

Item	Display item	Descriptions of item content	Set range	Default	Developing bias voltage			
					Monitor (High voltage PWB)		Pin No.	Actual voltage
					Monitor voltage (Specified value)	Connector		
4	MIDDLE SPEED DV_C	C color developing bias set value at the intermediate speed (117mm/s)	0 – 585	265	5.76 ± 0.1V	CNMON	1	–265v
5	LOW SPEED DV_C	C color developing bias set value at the low speed (58.5mm/s)	0 – 585	235	4.75 ± 0.1V	CNMON	1	–235v
6	MIDDLE SPEED DV_M	M color developing bias set value at the intermediate speed (117mm/s)	0 – 585	265	5.76 ± 0.1V	CNMON	5	–265v
7	LOW SPEED DV_M	M color developing bias set value at the low speed (58.5mm/s)	0 – 585	235	4.75 ± 0.1V	CNMON	5	–235v
8	MIDDLE SPEED DV_Y	Y color developing bias set value at the intermediate speed (117mm/s)	0 – 585	240	4.75 ± 0.1V	CNMON	9	–240v
9	LOW SPEED DV_Y	Y color developing bias set value at the low speed (58.5mm/s)	0 – 585	210	3.78 ± 0.1V	CNMON	9	–210v

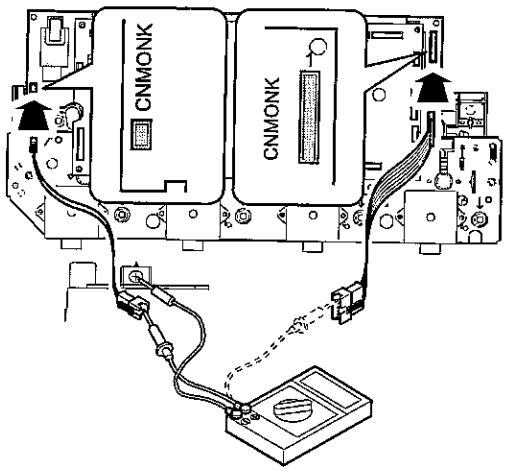
Actually it is of negative polarity and the actual output range is –0V to –585V.

Remark: When the default value is set, the specified voltage is outputted.
There is, therefore, no need to check the output voltage unless there is a doubt for any abnormality in the output voltage.
If there is a need to check that the normal voltage is outputted or to adjust by referring to the output voltage, use the method below.

1) Remove the rear cover of the machine.
2) Remove the image process fan motor and the duct.



3) Connect the high voltage adjustment harnesses (DHAi-3471FCZZ/ DHAi-3472FCZZ) with the connectors CNMON and CNMONK on the high voltage PWB.



4) Enter the SIM8-2 mode.
5) Select the output mode to be adjusted with the [MENU] key.
6) Check that the pin numbers of the connectors CNMON and CNMONK are properly assigned to the connector pin numbers of the high voltage adjustment harness.
7) Apply a digital multi-meter to the connector pins of the high voltage adjustment harness corresponding to the output mode to be adjusted.
8) Press the [OK] key.

   The developing bias voltage is outputted for 30sec.

   If this operation is performed for a long time, the OPC drum and the developing roller may be damaged. Be careful to perform this operation in a short time.

   It is advisable to install an unnecessary developing unit and unnecessary OPC drums to the machine for this adjustment.
9) Check the monitor voltage with the digital multi-meter.

   If the monitor voltage is not in the above specified range, change the adjustment value and adjust again. If the specified voltage is not obtained even by changing the adjustment value, the following parts may be judged as defective.

   High voltage PWB

   PCU PWB

   Developing unit

   Photoconductor unit

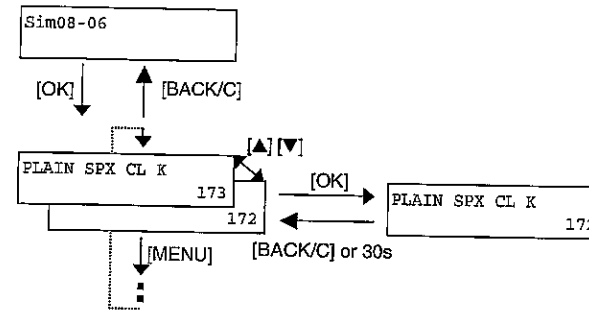
   High voltage circuit electrode

ADJ 1C Transfer voltage adjustment

This adjustment must be performed in the following cases:

- When the high voltage power PWB is replaced.
- When a U2 trouble occurs.
- When the PCU PWB is replaced.
- When the EEPROM of the PCU PWB is replaced.

1) Enter the SIM 8-6 mode.



2) Select the mode to be adjusted with the [MENU] key.
3) Enter the adjustment value (specified value), and press the [OK] key.

   By entering the default value (specified value), the specified voltage is outputted.

* (During output of the voltage, the drum motor and the belt motor are driven at the belt lower limit position. (Drum damage prevention measures))

Item	Display item	Descriptions of item content	Set range	Actual output setting range	Default	Initial value actual output value
1	PLAIN SPX CL K	K color transfer set value in the color mode normal paper front surface	51 – 255	0 – 4000	173	2200
2	PLAIN DPX CL K	K color transfer set value in the color mode normal paper back surface	51 – 255	0 – 4000	188	2500
3	OHP1 CL K	K color transfer set value in the color mode OHP1	51 – 255	0 – 4000	204	3000
4	OHP2 CL K	K color transfer set value in the color mode OHP2	51 – 255	0 – 4000	137	1700
5	HEAVY P1 SPX CL K	K color transfer set value in the color mode heavy paper 1 front surface	51 – 255	0 – 4000	158	1900
6	HEAVY P1 DPX C K	K color transfer set value in the color mode heavy paper 1 back surface	51 – 255	0 – 4000	188	2500
7	HEAVY P2 CL K	K color transfer set value in the color mode heavy paper 2	51 – 255	0 – 4000	173	2200
8	ENVELOPE CL K	K color transfer set value in the color mode envelope	51 – 255	0 – 4000	163	2200
9	PLAIN SPX C	C color transfer set value in the color mode normal paper front surface	51 – 255	0 – 4500	159	2200
10	PLAIN DPX C	C color transfer set value in the color mode normal paper back surface	51 – 255	0 – 4500	173	2500
11	OHP1 C	C color transfer set value in the color mode OHP1	51 – 255	0 – 4500	187	3000
12	OHP2 C	C color transfer set value in the color mode OHP2	51 – 255	0 – 4500	150	2200
13	HEAVY P1 SPX C	C color transfer set value in the color mode heavy paper 1 front surface	51 – 255	0 – 4500	146	1900
14	HEAVY P1 DPX C	C color transfer set value in the color mode heavy paper 1 back surface	51 – 255	0 – 4500	173	2500
15	HEAVY P2 C	C color transfer set value in the color mode heavy paper 2	51 – 255	0 – 4500	159	2200
16	ENVELOPE C	C color transfer set value in the color mode envelope	51 – 255	0 – 4500	150	2200
17	PLAIN SPX M	M color transfer set value in the color mode normal paper front surface	51 – 255	0 – 6000	132	2200
18	PLAIN DPX M	M color transfer set value in the color mode normal paper back surface	51 – 255	0 – 6000	142	2500
19	OHP1 M	M color transfer set value in the color mode OHP1	51 – 255	0 – 6000	153	3000
20	OHP2 M	M color transfer set value in the color mode OHP2	51 – 255	0 – 6000	153	3000
21	HEAVY P1 SPX M	M color transfer set value in the color mode heavy paper 1 front surface	51 – 255	0 – 6000	122	1900
22	HEAVY P1 DPX M	M color transfer set value in the color mode heavy paper 1 back surface	51 – 255	0 – 6000	142	2500
23	HEAVY P2 M	M color transfer set value in the color mode heavy paper 2	51 – 255	0 – 6000	132	2200
24	ENVELOPE M	M color transfer set value in the color mode envelope	51 – 255	0 – 6000	125	2200
25	PLAIN SPX Y	Y color transfer set value in the color mode normal paper front surface	51 – 255	0 – 6000	132	2200
26	PLAIN DPX Y	Y color transfer set value in the color mode normal paper back surface	51 – 255	0 – 6000	142	2500
27	OHP1 Y	Y color transfer set value in the color mode OHP1	51 – 255	0 – 6000	153	3000
28	OHP2 Y	Y color transfer set value in the color mode OHP2	51 – 255	0 – 6000	163	3300
29	HEAVY P1 SPX Y	Y color transfer set value in the color mode heavy paper 1 front surface	51 – 255	0 – 6000	122	1900
30	HEAVY P1 DPX Y	Y color transfer set value in the color mode heavy paper 1 back surface	51 – 255	0 – 6000	142	2500
31	HEAVY P2 Y	Y color transfer set value in the color mode heavy paper 2	51 – 255	0 – 6000	132	2200
32	ENVELOPE Y	Y color transfer set value in the color mode envelope	51 – 255	0 – 6000	125	2200
33	PLAIN SPX BW K	K color transfer set value in the black and white mode normal paper front surface	51 – 255	0 – 4000	178	2300
34	PLAIN DPX BW K	K color transfer set value in the black and white mode normal paper back surface	51 – 255	0 – 4000	178	2500
35	OHP1 BW K	K color transfer set value in the black and white mode HP1	51 – 255	0 – 4000	204	3000
36	OHP2 BW K	K color transfer set value in the black and white mode HP2	51 – 255	0 – 4000	137	1700
37	HEAVY P1 SPX BW K	K color transfer set value in the black and white mode heavy paper 1 front surface	51 – 255	0 – 4000	147	1900
38	HEAVY P1 DPX BW K	K color transfer set value in the black and white mode heavy paper 1 back surface	51 – 255	0 – 4000	178	2500
39	HEAVY P2 BW K	K color transfer set value in the black and white mode heavy paper 2	51 – 255	0 – 4000	163	2200
40	ENVELOPE BW K	K color transfer set value in the black and white mode envelope	51 – 255	0 – 4000	168	2300

Color	Actual output variable range	Voltage change/Adjustment value (1) (Varying amount when the adjustment value is changed by 1)
K	0 to 4000V	About 19.6V
C	0 to 4500V	About 22.1V
M	0 to 6000V	About 29.4V
Y	0 to 4000V	About 29.4V

Press the [OK] key to output the transfer voltage.

ADJ 2 Image density sensor adjustment

The image density sensor sections are of uneven quality in parts and assembly. This causes variations in the absolute detection level between machines. This adjustment (calibration) is performed to correct the variations.

This adjustment is required in the following cases:

- When the image density sensor is replaced.
- When the transfer unit is replaced.
- When maintenance is performed.
- When U2 trouble occurs.
- When the PCU PWB is replaced.
- When the EEPROM on the PCU PWB is repalced.

The targets of the adjustment are the color image density sensor and the black image density sensor. There are following adjustment methods:

- Color image density sensor adjustment (adjustment by the adjustment jig) SIM44-13
- Black image sensity sensor adjustment SIM44-2
- Image density sensor adjustment (The color image density sensor and the black image density sensor are adjusted at the same time.) (Simple adjustment) SIM44-36

Normally the following adjustments are executed:

- ADJ 2A Color image density sensor adjustment (adjustment by the adjustment jig) (SIM44-13)
- ADJ 2B Black image density sensor adjustment (SIM44-2)

Note:

There are two methods to adjust the color image density sensor; one method uses the adjustment jig, and the other method does not use it.

If there is no adjustment jig available, the simple adjustment (SIM44-36) can be made, which may, however, result in insufficient adjustment accuracy depending on the machine condition.

If toner, the OPC drum, and the transfer belt are not new ones or almost new ones, the simple adjustment is not recommended.

Even though the machine conditions are well, the adjustment by use of the adjustment jig gives a higher adjustment accuracy than the adjustment without the adjustment jig (simple adjustment).

Also note that SIM44-36 must not executed unnecessarily after execution of the color image density sensor adjustment (adjustment by the adjustment jig) with SIM44-13.

If SIM 44-36 is executed, the contents of the color image density sensor adjustment (adjustment by the adjustment jig) with SIM44-13 are erased, and the adjustment result of SIM44-36 is saved.

When the color image density sensor is adjusted with SIM44-13 and the black image density sensor is adjsuted with SIM 44-2, the adjustment with SIM44-36 is not required.

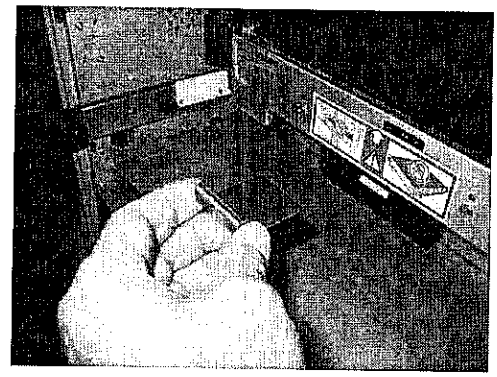
To adjust the black image density sensor, the adjustment jig is not required.

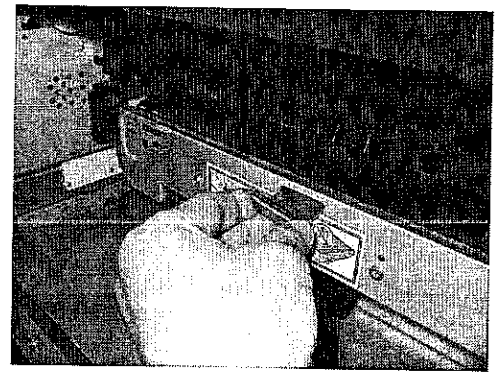
Before executing this adjustment, check the following items:

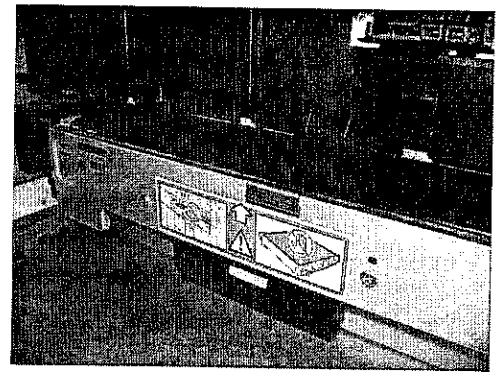
- Check that the color imagte density sensor is clean.
- Check that the image density sensor calibration plate is clean.
- Check that the transfer belt is free from scratches.

ADJ 2A Color image density sensor adjustment (adjustment by the adjustment jig)

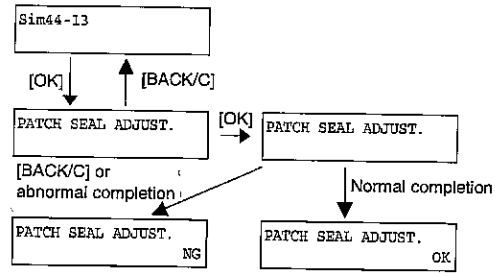
1) Open the front cover of the machine.
2) Insert the color image density sensor adjustment jig (CPLTM6305FC01) into the long hole in the transfer unit frame, and close the left cabinet.







3) With the front cover of the machine open (with the cover open/close switch OFF), turn on the power.
4) The Machine enters Sim 44-13 mode.



5) Close the front cover of the machine.
6) Press the [OK] key.

The adjustment is automatically performed. When the adjustment is completed, the adjustment result is displayed and the DATA LED is turned off.

Item	Display	Content	Min Value	Max Value	Default value	Updating
A	PCS_C CARB ADJ	Color image density sensor LED current adjustment target value	1	255	108	Yes

Item	Display	Content	Min Value	Max Value	Default value	Updating
B	PCS_C DARK	Color image density sensor dark voltage level	0	255	0	None
C	PCS_C LED ADJ	Color image density sensor current adjustment value	1	255	51	Yes

7) Remove the color image density sensor adjustment jig.

If the adjustment is not completed normally, "NG" is displayed.

In that case, check the following sections for no abnormality. If there is any abnormality, repair the part and perform the adjustment again. In case of an error, the adjustment result is not revised.

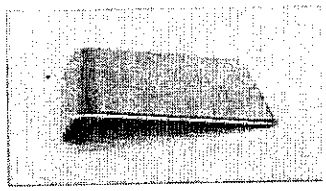
- Image density sensor
- PCU PWB
- Transfer belt

Note:

The color image density sensor adjustment jig is available in the following two forms:

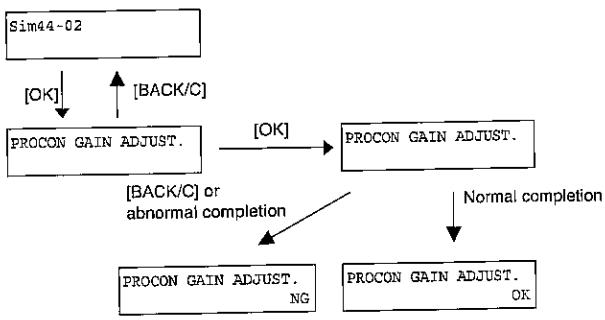
- The jig metal plate with the calibration sheet attached to it (CPLTM6305FC01)
- Calibration sheet (for replacement) (TLABZ4843FCZZ)

TLABZ4843FCZZ is the calibration sheet for replacement. When the calibration sheet attached to CPLTM6305FC01 is dirty or scratched too much to be used, replace only the calibration sheet with a new one.



ADJ 2B Black image density sensor adjustment

1) Enter the SIM44-2 mode.



2) Press the [OK] key.

The adjustment is performed automatically.

The adjustment is automatically performed. When the adjustment is completed, the adjustment result is displayed and the DATA LED is turned off.

Display		Content	Min Value	Max Value	Default value	Updating
A	PCS_C LED ADJ	Color image density sensor current adjustment value	1	255	51	Yes
B	PCS K LED ADJ	Black image density sensor LED current adjustment value	1	255	51	Yes
C	PCS_K GAIN	Black image density sensor output gain (AMP) adjustment value	0	15	0	Yes
D	PCS_K DARK	Black image density sensor dark voltage level	0	255	0	None
E	PCS_K GRND	Black image density sensor transfer belt surface detection level	0	255	0	Yes
F	BELTMAX	Transfer belt surface max. detection level (Black image sensor)	0	255	0	Yes
G	BELTMIN	Transfer belt surface min. detection level (Black image sensor)	0	255	0	Yes
H	BELTDIF	Difference between max. and min. of the transfer belt surface detection level (BELTmax-BELTMIN)	0	255	0	Yes

If the adjustment is not completed normally, "NG" is displayed.

In that case, check the following sections for no abnormality. If there is any abnormality, repair the part and perform the adjustment again.

In case of an error, the adjustment result is not revised.

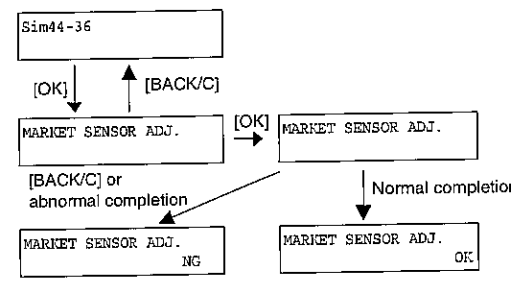
- Image density sensor
- PCU PWB
- Transfer belt

ADJ 2C Color image density sensor & black image density sensor adjustment (Simple adjustment)

When the color image density sensor is adjusted with SIM44-13 and the black image density sensor is adjusted with SIM44-2, the adjustment with SIM44-36 is not required.

In addition, the color image density adjustment jig is not used.

1) Enter the SIM44-36 mode.



2) Press the [OK] key.

The adjustment is automatically performed. When the adjustment is completed, the adjustment result is displayed and the DATA LED is turned off.

Display	Content	Min Value	Max Value	Default value	Updating
PCS_C CARB ADJ	Color image density sensor LED current adjustment target value	1	255	108	Yes
PCS_C DARK	Color image density sensor dark voltage level	0	255	0	None
PCS_C LED ADJ	Color image density sensor current adjustment value	1	255	51	Yes
PCS K LED ADJ	Black image density sensor LED current adjustment value	1	255	51	Yes
PCS_K GAIN	Black image density sensor output gain (AMP) adjustment value	0	15	0	Yes
PCS_K DARK	Black image density sensor dark voltage level	0	255	0	None
PCS_K GRND	Black image density sensor transfer belt surface detection level	0	255	0	None
BELTMAX	Transfer belt surface max. detection level (Black image sensor)	0	255	0	None
BELTMIN	Transfer belt surface min. detection level (Black image sensor)	0	255	0	None
BELTDIF	Difference between the max. value and the min. value of transfer belt surface detection level (BELTMAX-BELTMIN)	0	255	0	None

If the adjustment is not completed normally, "NG" is displayed.

In case of an error, the adjustment result is not revised.

In that case, check the following sections for no abnormality. If there is any abnormality, repair the part and adjust again.

- Image density sensor
- PCU PWB
- Transfer belt

ADJ 3 Image focus, image skew adjustment (LED unit)

(1) LED print engine image focus adjustment (LED unit)

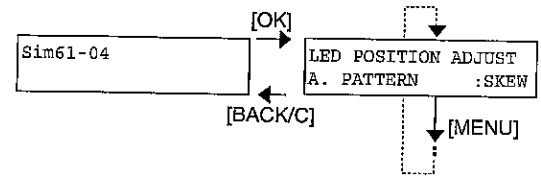
This adjustment must be performed in the following cases:

- When the LED unit is replaced.
- When the LED unit is removed from the machine.
- When the print image is shifted.
  (Especially conspicuous for text and line drawings)
- When there is uneven density in the main scanning direction.
- When the color balance adjustment does not result in proper color matching.
- When in installation or when the installing site is changed. (Necessary depending on the case)

1) Execute the process correction forcibly. (SIM44-6)

This simulation is used to correct the print density of the adjustment pattern.

2) Enter the SIM 61-4 mode.



3) Set the items A, B and C according to the table below.

	Parameter	Set value
A	PATTERN	FOCUS
B	LINE PITCH	7
C	POSITION	6

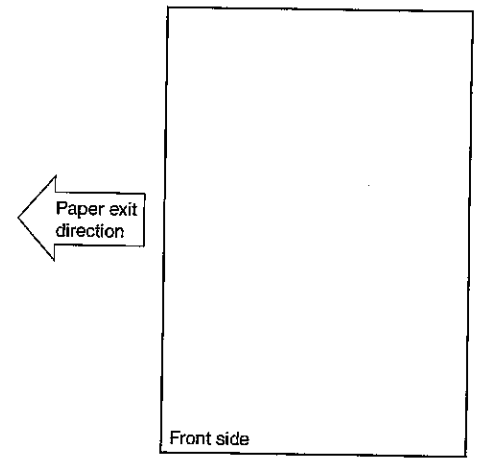
4) Select the A4 (11 x 8 1/2) paper feed tray.

5) Press the [OK] key.

The focus adjustment pattern is printed.

6) Check the printed focus adjustment pattern for each color.

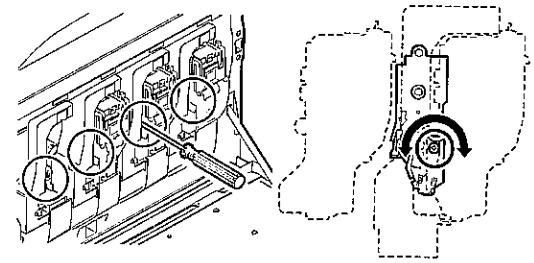
If focus is proper, the half-tone belts are printed properly. When four or five half-tone belts of each color are printed and there is no density difference in the main scanning direction (back and forth), the focus is proper both on the front and the back sides.



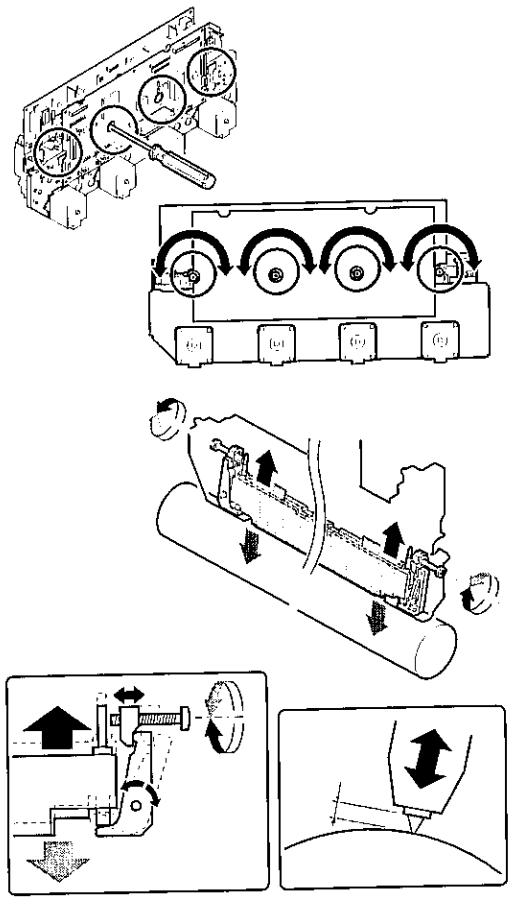
Check that the half-tone belts of each color are printed in good balance.

7) If the above condition is not satisfied, turn the focus adjustment screws on the front/rear frame sides to adjust focus.

Focus on the front side can be separately adjusted from focus on the rear side.



Front frame side



Rear frame side

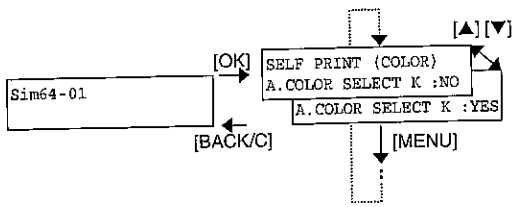
Execute procedures 4) to 6) for each color.

(2) Print engine image skew adjustment (LED unit)

This adjustment must be performed in the following cases:

- When the LED unit is replaced.
- When the LED unit is removed from the machine.
- When the print image includes skew.
- When a color image registration error occurs. (There is an image registration difference in the main scanning direction.)
- When there is uneven density in the main scanning direction.
- When the color balance adjustment does not result in proper color matching.
- When in installation or when the installing site is changed. (Necessary depending on the case)

1) Enter the SIM 64-1 mode.

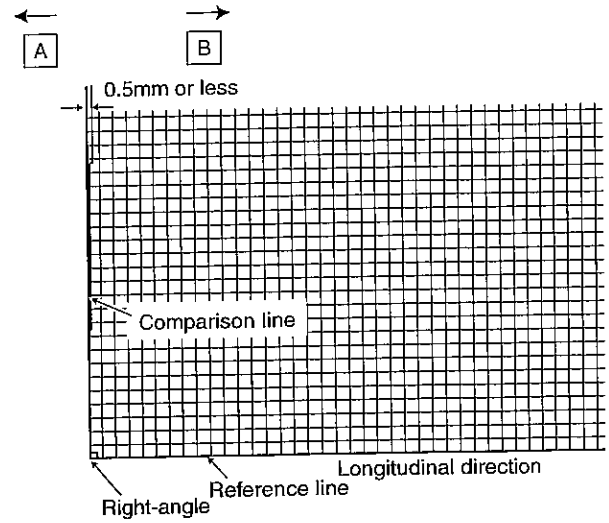


2) Set the items E and F according to the table below.

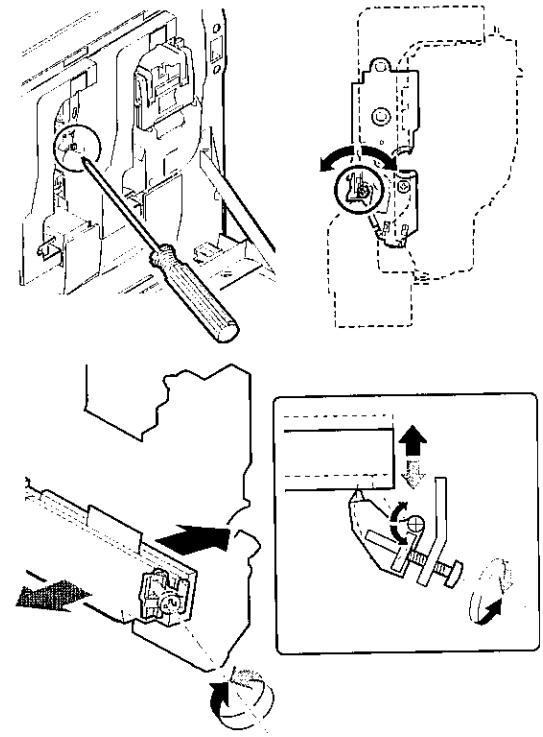
	Parameter	Set value
E	PRINT PATTERN	1
F	DENSITY	1

3) Select the A3 (11 x 17) size paper feed tray.
4) Press the [OK] key.
   The grid patter (one page) is printed.
5) Check the printed grid pattern. (Check for image skew (distortion).)

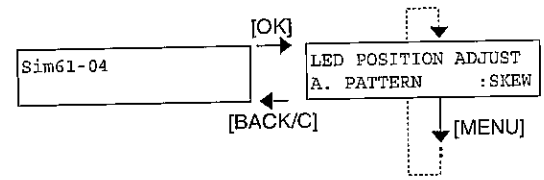
If the right-angle level of the traverse print line is 0.5mm or less for the longitudinal print line of paper, there is no need to adjust.



6) If the above conditions are not satisfied, remove the developing unit and turn the print engine image skew adjustment screw to adjust.
   At that time, use SIM 7-1 to set DV CHECK DISABLE to Enable and to disable the developing unit installation detection.
   If skew is made in the arrow direction A, turn the adjustment screw clockwise. If skew is made in the arrow direction B, turn the adjustment screw counterclockwise.



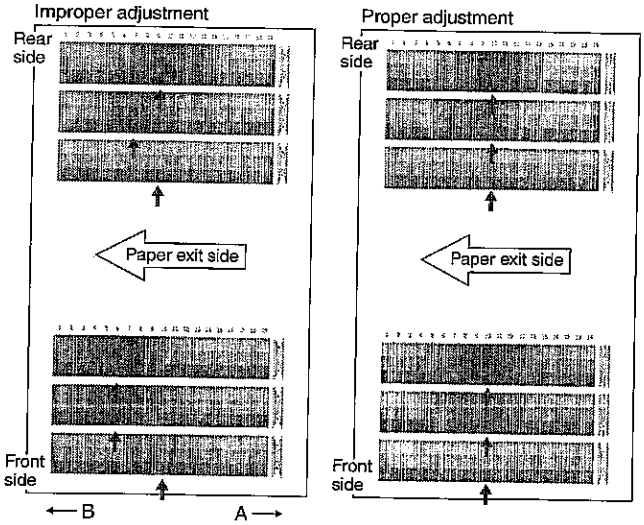
7) Enter the SIM 61-4 mode.



8) Select the A4 (11 x 8.5) size paper feed tray.
9) Press the [OK] key.
   The print engine image skew adjustment pattern is printed. (One page)

10) Check the printed image skew (distortion) pattern.

Compare the same color print pattern on the front frame side with that on the rear frame side, and check that the difference between the two highest-density areas is within 2 steps. (Compare the same color print pattern on the front frame side with that on the rear frame side. There is no need for the positions of the highest-density areas of the print color patterns of all the colors to be aligned on a line. Compare only the same color pattern positions.)



If the above conditions are not satisfied, remove the developing unit on the left and turn the print engine image skew adjustment screw on the front frame side.

To adjust the print engine image skew of Cyan, for example, remove the Magenta developing unit. (To adjust the print engine image skew of Yellow, however, this is not required.)

At that time, use SIM 7-1 to set DV CHECK DISABLE to Enable and to disable the developing unit installation detection.

When the image pattern on the front frame side is skewed to the right (arrow direction A) with the rear frame side as the reference, turn the adjustment screw clockwise. When the image pattern is skewed to the left (arrow direction B), turn the adjustment screw counterclockwise.

When the adjustment screw is turned 1/4 rotation, the image position is shifted by one dot.

Remark: The print engine image focus adjustment is performed by changing the distance between the LED array unit and the OPC drum.

The print engine image skew adjustment is performed by changing the parallelism of the LED array unit for the OPC drum.

If either of the two adjustments is performed, it may affect the other adjustment due to the machine structure.

After completion of the above procedures, check that both of the above two adjustments are satisfied.

ADJ 4 Image registration adjustment

There are two methods of the image registration adjustment: the manual adjustment and the automatic adjustment. Either of them uses the simulation.

This adjustment is required in the following cases:

- When the LED unit is replaced.
- When the LED unit is removed from the machine.
- When color image mis-resist is generated in the main scanning direction.
- When color image mis-resist is generated in the sub scanning direction.
- When installation or the installing place is changed.
- When maintenance is performed. (When the OPC drum, the photoconductor cartridge, the transfer unit, or the transfer belt is replaced.)
- When U2 trouble occurs.
- When ICU PWB is replaced.
- When EEPROM on ICU PWB is replaced.

Remark: Though SIM 50-22 is not performed under the following conditions, the image registration adjustment is performed automatically.

* When the toner cartridge is replaced.
* At every 8,000 copies (total of print quantity and copy quantity) (When 8,000 copies is reached during a job, the machine stops after completion of the job.)

If the set item AR of SIM 44-1 is set to OFF (Disable), the above operation is not performed.

After setting the image registration to the best by SIM 50-20, when the image registration adjustment is automatically performed, the best-adjusted condition may be varied. To avoid this, set the item AR of SIM 44-1 to OFF (Disable).

Note:

Before executing this adjustment, check that the following adjustments have been properly completed.

* Print engine image focus adjustment (Scanner (writing) unit)
* Print engine image skew adjustment (Scanner (writing) unit)
* Image registration sensor adjustment
* SIM 48-6 FSM (Fuser roller speed) is set to the default.

Default setup of SIM 48-6 FSM (Fuser roller speed)

FSM(S): 80 (For paper of 420mm or shorter in the transport direction)

FSM(L): 85 (For paper of 420mm or longer in the transport direction)

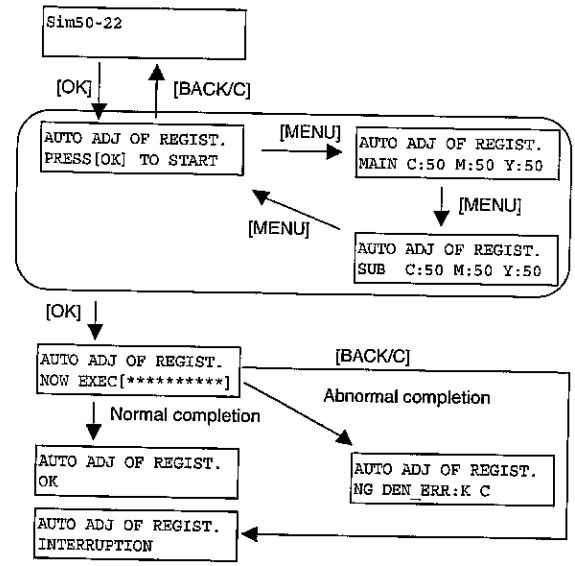
FSM(HEAVY PAPER): 85

FSM(ENV): 70

ADJ 4A Image registration adjustment (Auto adjustment)

This adjustment is used to perform the image registration adjustment in the main scanning direction and in the sub scanning direction at the same time with the simulation.

1) Enter the SIM 50-22 mode.

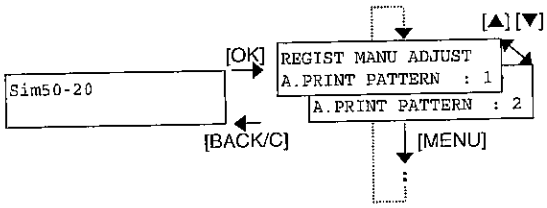


2) Press the [OK] key.

The DATA LED flashes and the automatic adjustment of registration is started. When the adjustment is completed, the DATA LED is turned off and the adjustment result is displayed.

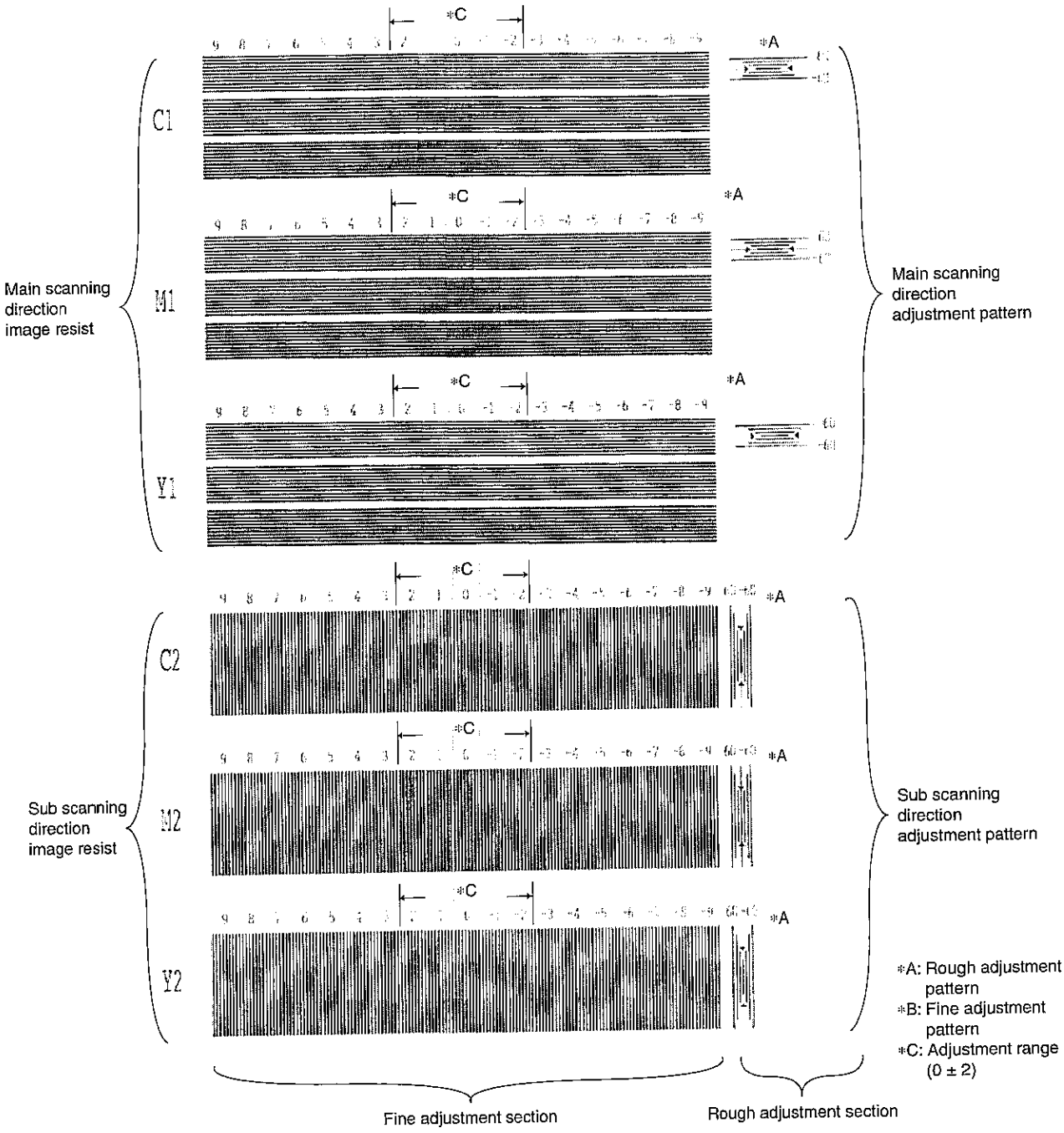
The adjustment process status is indicated with (*) mark. It takes several minutes to complete the adjustment.

3) Enter the SIM 50-20 mode.



4) Select the A4 (11 x 8 1/2) size paper feed tray.
5) Press the [OK] key.
   The image registration adjustment pattern is printed.

- Image registration adjustment pattern



C1 = CYAN MAIN
C2 = CYAN SUB
M1 = MAGENTA MAIN
M2 = MAGENTA SUB
Y1 = YELLOW MAIN
Y2 = YELLOW SUB

6) Check the rough adjustment print pattern position and the fine adjustment print pattern position of each color on the front and the rear frame sides.

Check visually and use the highest-density area of each color as the center, and regard it as the reading value of shift.

Rough adjustment print pattern check: Check that the rough adjustment print pattern is at the center for the rough adjustment reference pattern.

Fine adjustment print pattern check: Check that the fine adjustment print pattern is at the center for the fine adjustment reference pattern.

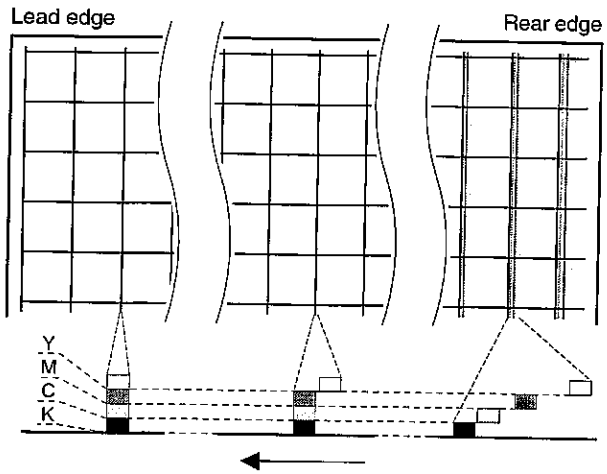
(If the fine adjustment print pattern is in the range of 0 ± 2 for the scale of the fine adjustment reference pattern, there is no need to adjust.)

If the adjustment is not completed with a satisfactory result, try the manual adjustment.

7) Set SIM 64-1 as shown below, and make a self print of cross pattern on A3 paper.

E: 1 F: 1 to 5 A to D: YES

8) Check the latter part of the A3 copy paper for any color shift in the paper transport direction.



If there is any color shift, change and adjust SIM 48-6 FSM (Fuser roller speed) setup.

When the paper transport speed in the transfer section differs from that of the fusing roller, color shift is generated on the latter half of paper.

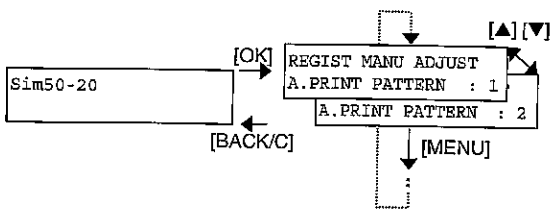
Especially when the paper transport speed of the fusing roller is greater than that in the transfer section, color shift is often generated on the latter half of paper.

This is because paper squeezed by the transfer roller and the OPC drum is pulled by the fusing roller.

The longer the paper size is, the greater the difference is in the paper transport speed between the fusing roller and the transfer section, resulting in greater color shift.

ADJ 4B Image registration adjustment (Manual adjustment)

1) Enter the SIM 50-20 mode.



2) Select the A4 (11 x 8 1/2) paper feed tray.

3) Press the [OK] key.

The image registration adjustment pattern is printed.

4) Check the rough adjustment print pattern position and the fine adjustment print pattern position of each color on the front and the rear frame sides.

Check visually and use the highest-density area of each color as the center, and regard it as the reading value of shift.

Rough adjustment print pattern check: Check that the rough adjustment print pattern is at the center for the rough adjustment reference pattern.

Fine adjustment print pattern check: Check that the fine adjustment print pattern is at the center for the fine adjustment reference pattern.

(If the fine adjustment print pattern is in the range of 0 ± 2 for the scale of the fine adjustment reference pattern, there is no need to adjust.)

If the above condition is not satisfied, change the adjustment value and tray again.

5) Select the color mode adjustment item to be adjusted with the [MENU] key. Change the adjustment value and to adjust.

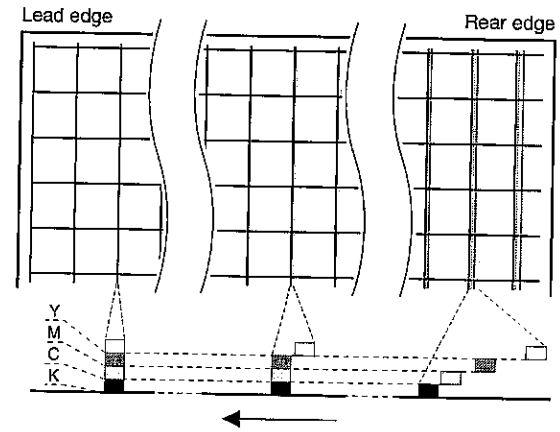
Item	Display	Content	Set range	Default
B	MAIN-REGIST C1	Main scanning direction registration adjustment (C)	12 – 88	50
C	MAIN-REGIST M1	Sub scanning direction registration adjustment (C)	12 – 88	50
D	MAIN-REGIST Y1	Main scanning direction registration adjustment (M)	12 – 88	50
E	SUB-REGIST C2	Sub scanning direction registration adjustment (M)	1 – 132	50
F	SUB-REGIST M2	Main scanning direction registration adjustment (Y)	1 – 132	50
G	SUB-REGIST Y2	Sub scanning direction registration adjustment (Y)	1 – 132	50

When the adjustment value is changed by 1, the image position is shifted by one pixel.

6) Set SIM 64-1 as shown below, and make a self print of cross pattern on A3 paper.

E: 1 F: 1 to 5 A to D: YES

7) Check the latter part of the A3 copy paper for any color shift in the paper transport direction.



If there is any color shift, change and adjust SIM 48-6 FSM (Fuser roller speed) setup.

When the paper transport speed in the transfer section differs from that of the fusing roller, color shift is generated on the latter half of paper.

Especially when the paper transport speed of the fusing roller is greater than that in the transfer section, color shift is often generated on the latter half of paper.

This is because paper squeezed by the transfer roller and the OPC drum is pulled by the fusing roller.

The longer the paper size is, the greater the difference is in the paper transport speed between the fusing roller and the transfer section, resulting in greater color shift.

Main scanning direction image position adjustment (Print engine section)

(1) How to read the fine adjustment pattern

The highest-density area of the color is regarded as the center and as the reading value of the shift amount.
(The reading value in the figure below is 4.)

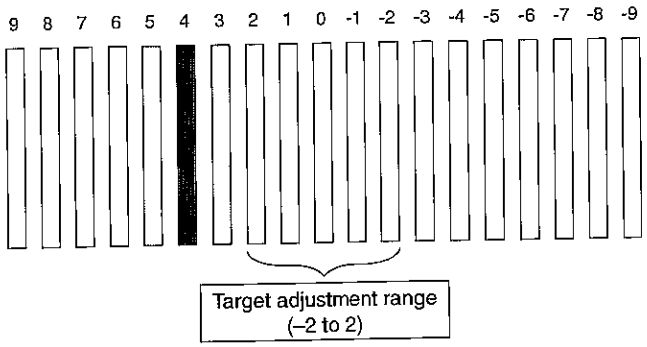
(2) How to read the rough adjustment pattern

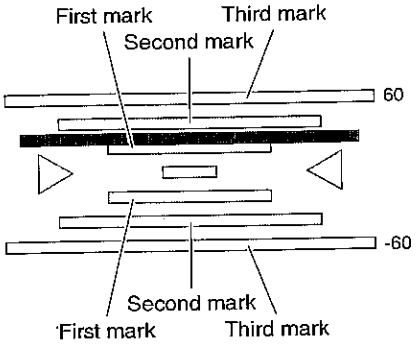
Judge the polarity by checking that the color line is shifted to the positive or the negative side.

The scales are made with the black line at the center as 0, the first mark as 20, the second mark as 40, and the third mark as 60.

The interval between rough adjustment marks is 20.
(For an example shown in the figure below, it is between 20 and 40 on the positive side. Therefore, the reading value is 20.)

(Example)





(3) How to calculate the adjustment value

New adjustment value = Current adjustment value + Rough adjustment pattern reading value + Fine adjustment pattern reading value

A: Current adjustment value

B: New adjustment value

X: Fine adjustment pattern reading value

Y: Rough adjustment pattern reading value

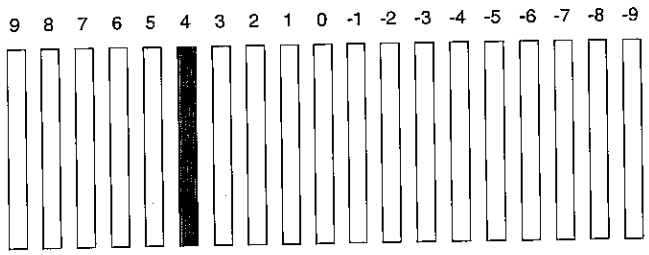
The polarity of the calculation differs depending on the polarity of the adjustment pattern reading values. There are following four cases:

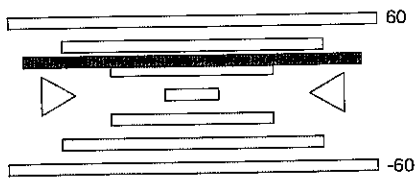
1) When $Y \geq 0$, and $X \geq 0$:
   $B = A + X + Y$
2) When $Y \geq 0$, and $X < 0$:
   $B = A + (X + 20) + Y$
3) When $Y < 0$, and $X \geq 0$:
   $B = A + (X - 20) + Y$
4) When $Y < 0$, and $X < 0$:
   $B = A + X + Y$

Example

A: Providing that Current adjustment value = 48:

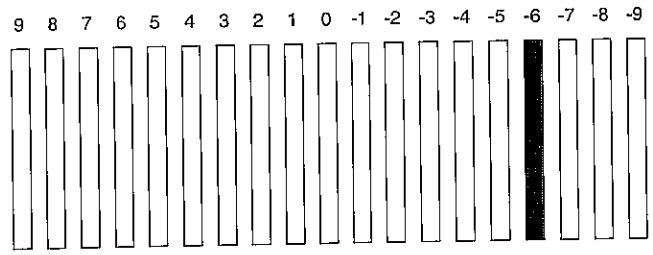
1) When $Y \geq 0$, and $X \geq 0$:

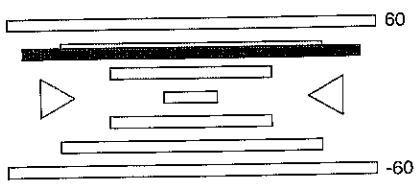




$B = A + X + Y = 48 + (4) + (20) = 72$

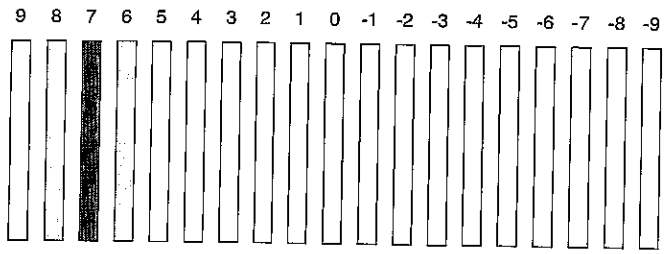
2) When $Y \geq 0$, and $X < 0$:

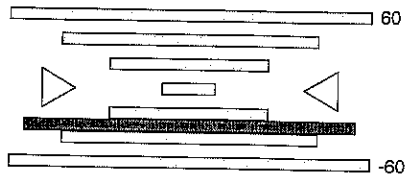




$B = A + (X + 20) + Y = 48 + (-6 + 20) + (20) = 82$

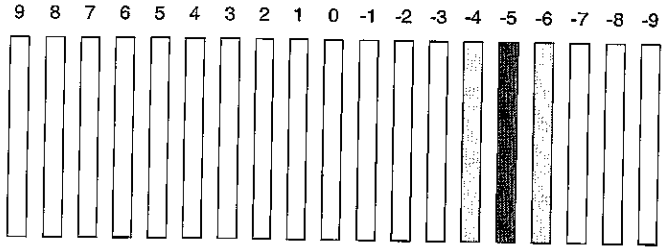
3) When Y < 0, and X ≥ 0:

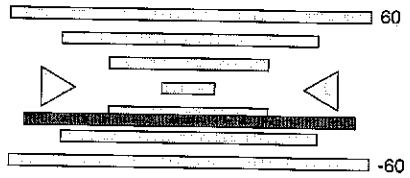




B = A + (X – 20) + Y = 48 + (7 – 20) + (–20) = 15

4) When Y < 0, and X < 0:





B = A + X + Y = 48 + (–5) + (–20) = 23

Sub scanning direction image position/print area adjustment (Print engine section)

(1) How to read the fine adjustment pattern

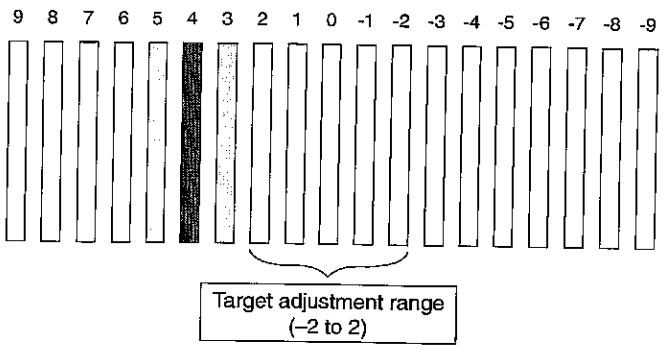
The highest-density area of the color is regarded as the center and as the reading value of the shift amount.
(The reading value in the figure below is 4.)

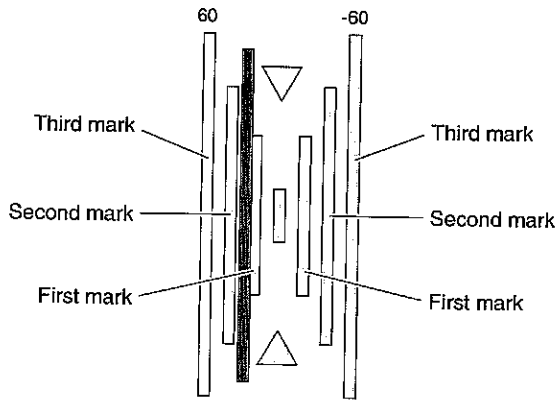
(2) How to read the rough adjustment pattern

Judge the polarity by checking that the color line is shifted to the positive or the negative side.

The scales are made with the black line at the center as 0, the first mark as 20, the second mark as 40, and the third mark as 60.

The interval between rough adjustment marks is 20.
(For an example shown in the figure below, it is between 20 and 40 on the positive side. Therefore, the reading value is 20.)
(Example)





(3) How to calculate the adjustment value

New adjustment value = Current adjustment value + Rough adjustment pattern reading value + Fine adjustment pattern reading value

A: Current adjustment value

B: New adjustment value

X: Fine adjustment pattern reading value

Y: Rough adjustment pattern reading value

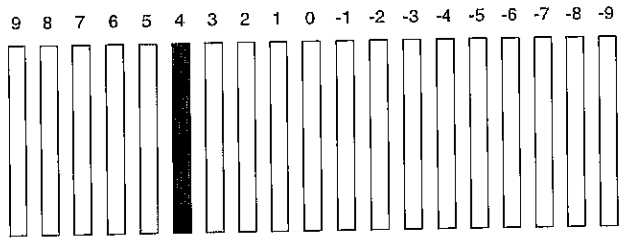
The polarity of the calculation differs depending on the polarity of the adjustment pattern reading values. There are following four cases:

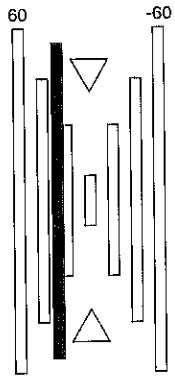
1) When Y ≥ 0, and X ≥ 0:
   B = A + X + Y
2) When Y ≥ 0, and X < 0:
   B = A + (X + 20) + Y
3) When Y < 0, and X ≥ 0:
   B = A + (X – 20) + Y
4) When Y < 0, and X < 0:
   B = A + X + Y

Example

A: Providing that Current adjustment value = 48:

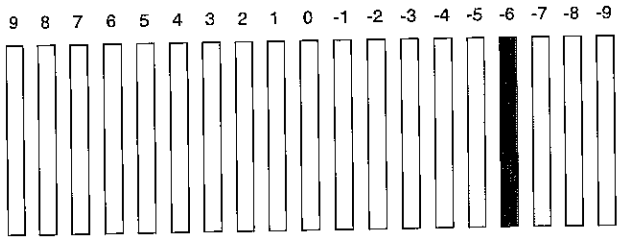
1) When Y ≥ 0, and X ≥ 0:

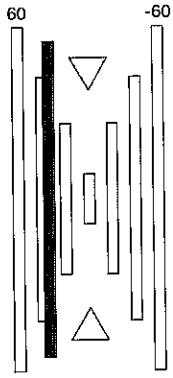




B = A + X + Y = 48 + (4) + (20) = 72

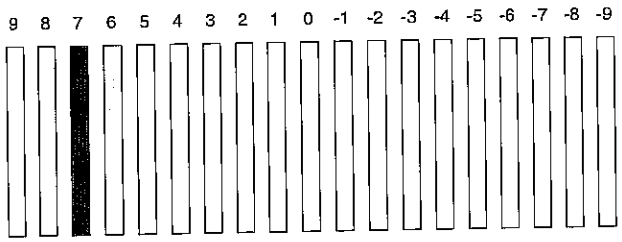
2) When Y ≥ 0, and X < 0:

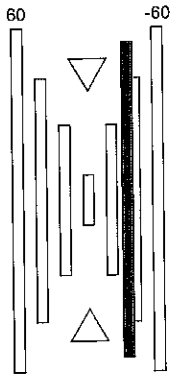




B = A + (X + 20) + Y = 48 + (−6 + 20) + (20) = 82

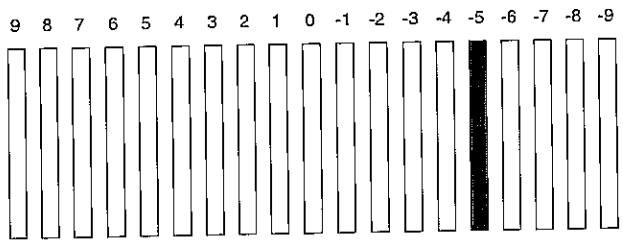
3) When Y < 0, and X ≥ 0:

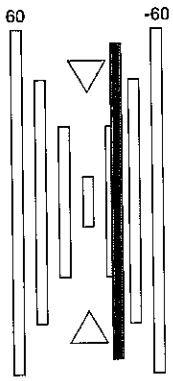




B = A + (X − 20) + Y = 48 + (7 − 20) + (−20) = 15

4) When Y < 0, and X < 0:





B = A + X + Y = 48 + (−5) + (−20) = 23

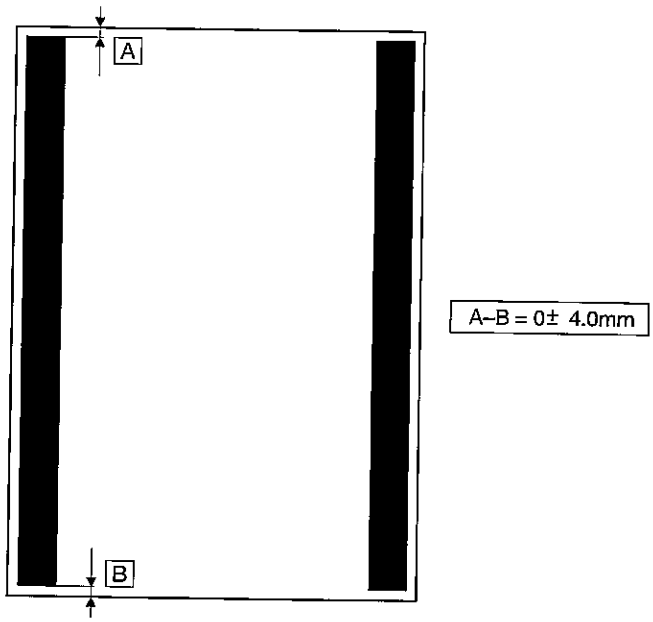
ADJ 5 Image position/print area adjustment (Print engine section)

ADJ 5A Main scanning direction image position adjustment (Print engine section)

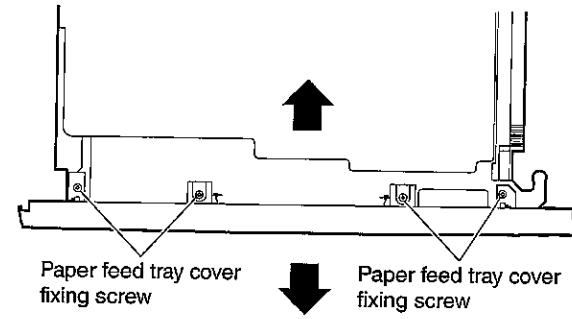
This adjustment must be performed in the following cases:

- When the paper tray is replaced.
- When the paper tray section is disassembled.
- When the manual paper feed tray is replaced.
- When the manual paper feed tray is disassembled.
- When the duplex section is disassembled.
- When the duplex section is installed or replaced.
- When the large capacity paper feed tray is installed or replaced.
- When the large capacity paper feed tray is disassembled.
- When a U2 trouble occurs.
- When the ICU main PWB is replaced.
- When the EEPROM of the ICU main PWB is replaced.

1) Enter the SIM 50-10 mode.
2) Select the paper feed mode to be adjusted with the [MENU] key.
3) Press the [OK] key.
   The adjustment pattern is printed.
4) Check the adjustment pattern image position.
   Measure the sizes of the void area on the front and the back edges of the adjustment pattern, and check that the following conditions are satisfied.
   If A – B = 0 ± 4.0mm, there is no need to adjust.
   If the above condition is not satisfied, perform the following procedure.



5) Change the adjustment value.
   (Enter the adjustment value and press the [OK] key.)
   When the adjustment value is increased, the image is shifted backward.
   When the adjustment value is decreased, the image is shifted forward.
   A change in the set value by 1 corresponds to a change in the shift by about 0.1mm.
   Repeat procedures 3) – 5) until the condition of procedure 4) is satisfied.
   If the above procedure does not satisfy the condition of 4), perform the following procedure.
6) Loosen the paper feed tray cover fixing screw, and shift the installing position in the arrow direction.
   Perform procedures from 2) again.



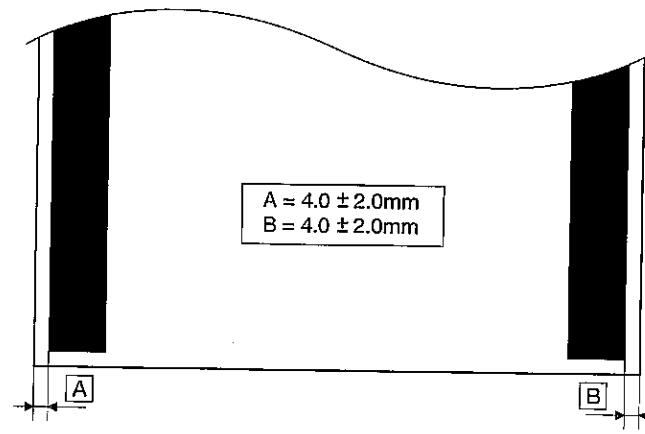
Perform the above procedures for all paper feed units.

ADJ 5B Sub scanning direction image position/ print area adjustment (Print engine section)

This adjustment must be performed in the following cases:

- When a U2 trouble occurs.
- When the ICU PWB is replaced.
- When the EEPROM of the ICU PWB is replaced.

1) Enter the SIM 50-5 mode.
2) Select the paper feed mode with the [MENU] key.
3) Press the [OK] key.
   The adjustment pattern is printed.
4) Check the adjustment pattern image position.



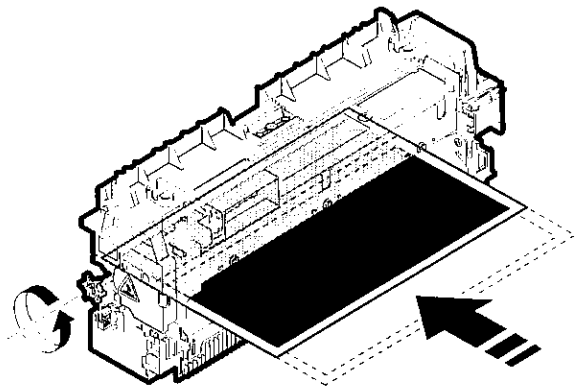
   Measure the sizes of the void area on the left and the right edges of the adjustment pattern, and check that the following conditions are satisfied.
   If A = 4.0 ± 2.0mm and B = 4.0 ± 2.0mm, the adjustment is not required.
   If the above condition is not satisfied, perform the following procedure.
5) Change the adjustment values of item A (DEN-C) and B (DEN-B), and press the [OK] key.
   When the adjustment value of item A (DEN-C) is decreased by 1, the print start position in the sub scanning direction is shifted to the paper lead edge by 0.125mm.
   When the adjustment value of item B (DEN-B) is decreased by 1, the print start position in the sub scanning direction is shifted to the paper rear edge by 0.125mm.
   Repeat procedures 3) – 5) until the condition of procedure 4) is satisfied.

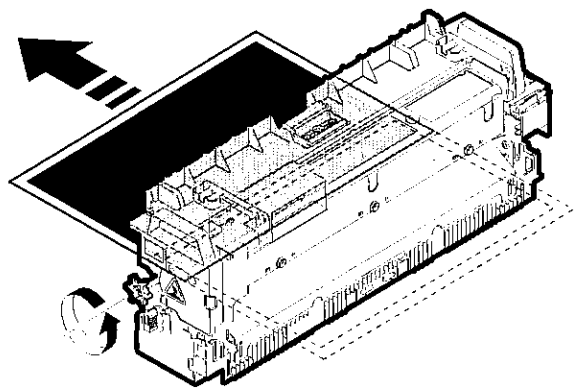
ADJ 6 Fusing pressure adjustment

This adjustment must be performed in the following cases:

- When the fusing section is disassembled.
- When a fusing trouble occurs.
- When wrinkles are generated on paper in the fusing section.

1) Select A4 (8.5 x 11) paper.
2) With the document cover open, press the start key of monochrome copy.
3) A copy of black background is made.
4) Open the left door.
5) Insert paper into the pre-transfer paper guide, and turn the fusing roller knob.

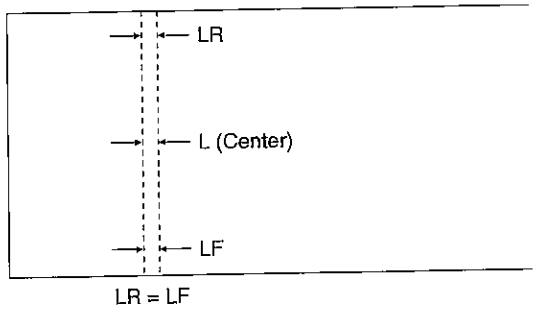




6) With the paper squeezed in the pre-transfer paper guide, wait for about 10sec.
7) Turn the fusing roller knob to remove the paper from the fusing section.
8) Measure the dimension (L) of the center section of the glittering line made by the fusing roller. Check that the dimension is in the specified range.

   Check that the pressure balance between the front and the rear frame sides is proper.

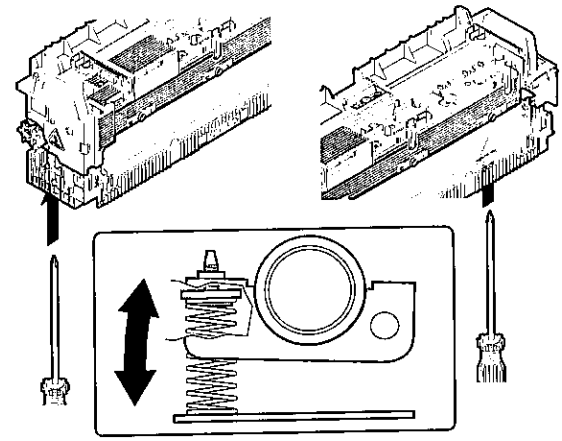
Value L = About 5.5mm



LR = LF

If the above conditions are not satisfied, perform the following procedure.

9) Turn the pressure adjustment screw on the front and the rear frame sides of the fusing unit to adjust the fusing pressure.



Repeat procedures 2) to 9) until the condition of procedure 8) is satisfied.

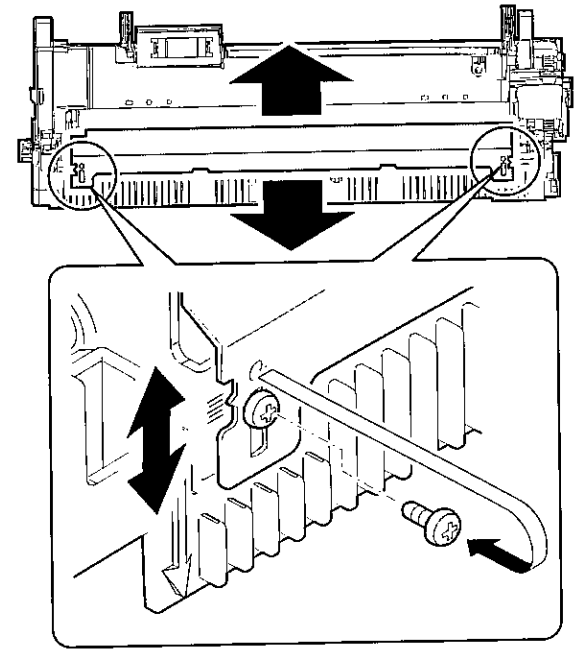
ADJ 7 Fusing paper guide position adjustment

This adjustment must be performed in the following cases:

- When the fusing section is disassembled.
- When a paper jam occurs in the fusing section.
- When wrinkles are generated on paper in the fusing section.
- When image deflection or unclear image is produced in the paper rear edge area.

The standard fixing position is at the center. However, change the position depending on the situations.

- When wrinkles are made on paper, shift the position upward.
- When image deflection or unclear image is produced in the paper rear edge area, shift the position downward.

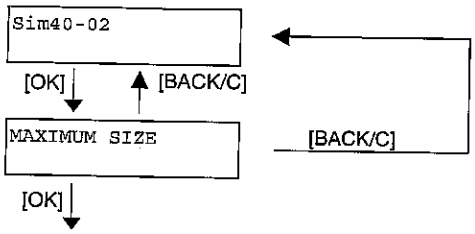


ADJ 8 Manual paper feed tray paper size sensor adjustment

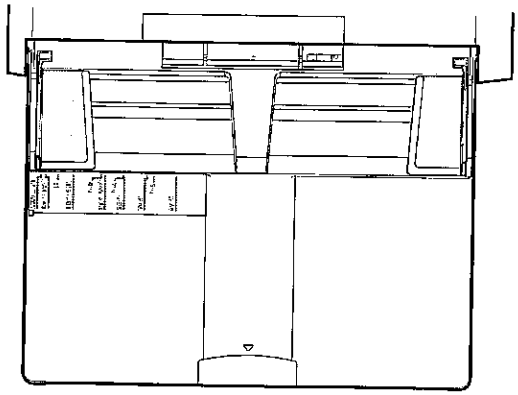
This adjustment must be performed in the following cases:

- When the manual paper feed tray section is disassembled.
- When the manual paper feed tray unit is replaced.
- When a U2 trouble occurs.
- When the PCU PWB is replaced.
- When the EEPROM of the PCU PWB is replaced.

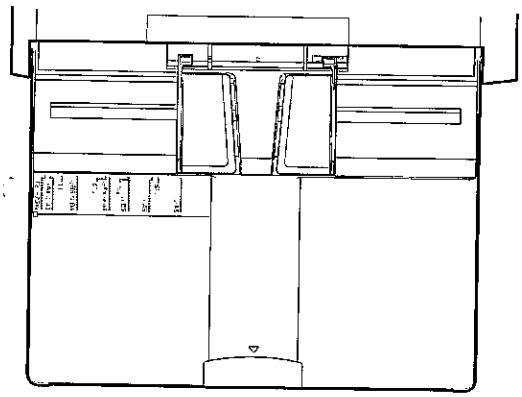
1) Enter the SIM 40-2 mode.



2) Set the manual paper feed guide to the maximum position.



3) Press the [OK] key.
4) Set the manual paper feed guide to A4 (11 x 8.5") size width.
5) Press the [OK] key.
6) Set the manual paper feed guide to A4R (11 x 8.5"R) size width.
7) Press the [OK] key.
8) Set the manual paper feed guide to the minimum position.



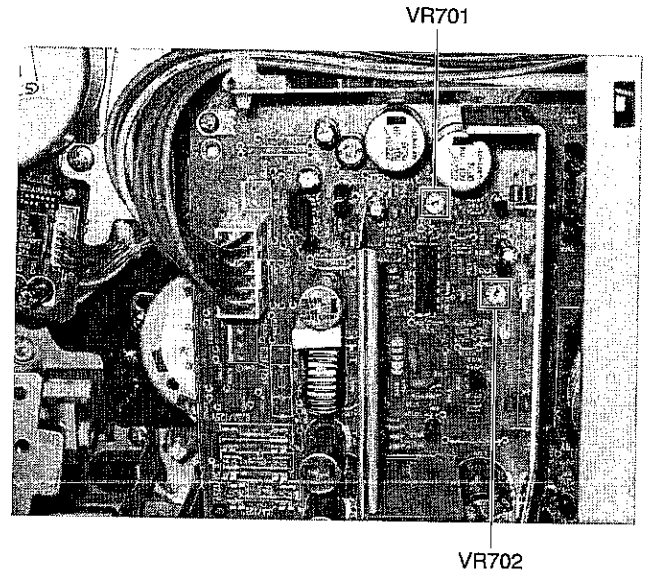
9) Press the [OK] key.

If the above procedure is not completed normally, "ERROR" is highlighted. If the above procedure is completed normally, the above data are stored and "COMPLETE" is displayed.

ADJ 9 Power voltage adjustment

This adjustment must be performed in the following cases:

- When a part in the DC power unit is replaced.



ADJ 9A 3.4 V power voltage adjustment

1) Put the multi-meter on the 3.4V line of the DC main PWB and GND.
2) Turn VR701 on the DC main PWB to adjust so that the voltage is 3.4V.

ADJ 9B 5.0 V power voltage adjustment

1) Put the multi-meter on the 5.0V line of the DC main PWB and GND.
2) Turn VR702 on the DC main PWB to adjust so that the voltage is 5.0V.

ADJ 10 Color balance adjustment

1. Outline

The printer color balance adjustment is used to manually adjust gradation of Cyan, Magenta, Yellow, and Black in each level of low, medium, and high density.

The color balance adjustment in the printer mode is generally performed by the user. However, a serviceman can perform this adjustment more accurately by use of the test chart for servicing.

2. Purpose

As the printer is used, ambient conditions and the depletion of consumables (the toner cartridge and drum cartridge) can gradually cause changes to occur in the four color components of color images, cyan, ma-genta, yellow, and black. This results in deviations in the color balance.

These deviations in the color balance occur gradually over a long period of time. Ambient conditions (temperature and humidity) and the number of times the printer is used can have a large effect on color devia-tion.

The printer has two color adjustment functions for the purpose of correcting deviations in the color balance.

These functions are executed from the key operator programs.

3. Execution conditions

Be sure to perform this adjustment when consumable part is replaced.

For execution of this adjustment, the print engine section must be in the normal condition. (All the adjustment items related to the print engine section must have been adjusted properly.)

4. Color balance adjustment mode

The printer has the following two color balance adjustment functions:

(1) Color balance adjustment

This function is used to adjust each of the density levels (low, mid, and high) of the four color components, cyan, magenta, yellow and black.

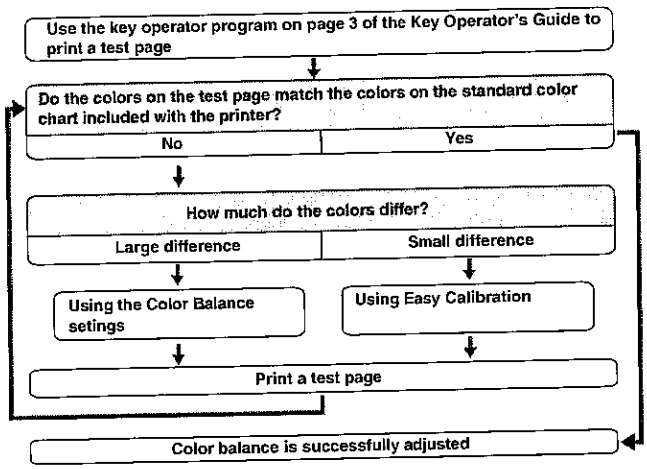
Use this mode when the color deviation is large.

(2) Easy calibration (Gray balance adjustment)

This mode is used for fine adjustment of the gray balance at the mid density level of the colors cyan, magenta, and yellow.

Use this mode to correct minor color deviations.

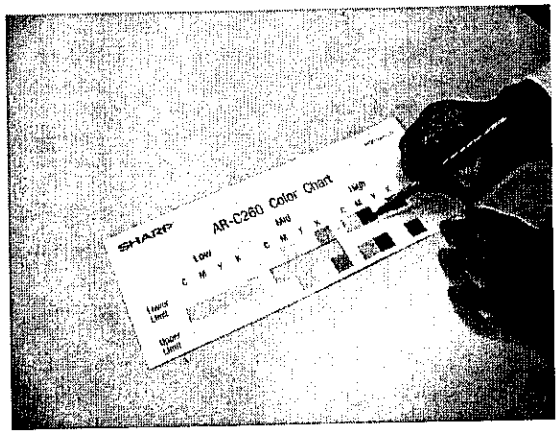
5. Color balance adjustment flow

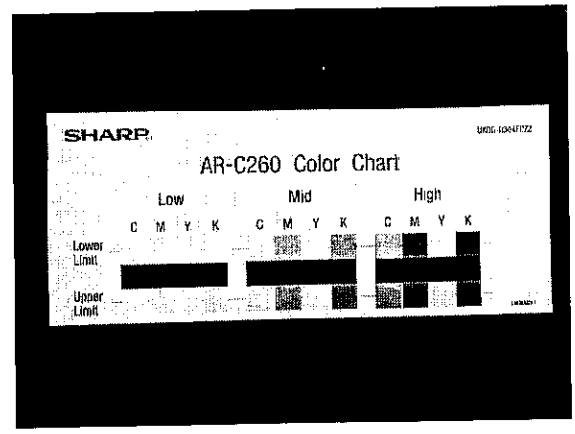

Use the key operator program on page 3 of the Key Operator's Guide to print a test page
Do the colors on the test page match the colors on the standard color chart included with the printer?
No
Yes
How much do the colors differ?
Large difference
Small difference
Using the Color Balance setings
Using Easy Calibration
Print a test page
Color balance is successfully adjusted

Test print: Used to check the current color balance and the gray level adjustment state. By executing this adjustment, the test page is printed.

(Preparation of the test chart)

Cut off the sections between two rows of the test pattern as shown below cutter.

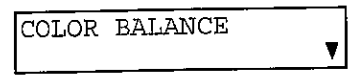




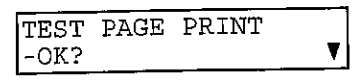
6. Adjustment details

A. Color balance adjustment

1) Select the COLRO BALANCE mode with the key operator program.



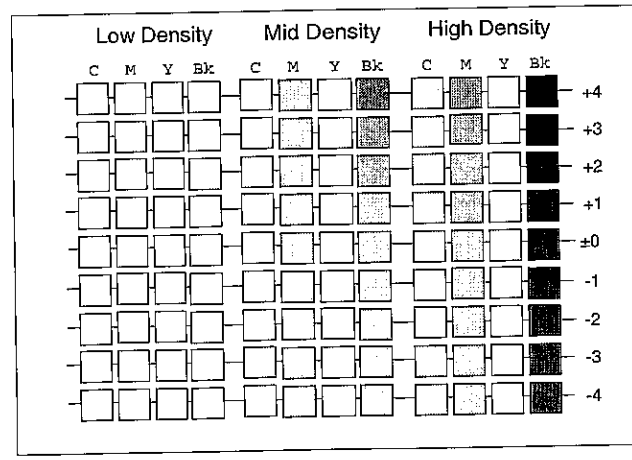
2) Press the [OK] key to switch to the TEST PAGE PRINT mode.



3) Select A4 or letter size paper and press the [OK] key, and the message of "PRINTING" is displayed on the display and the test pattern for color balance adjustment is printed out.

When printing is performed, all the adjustment values are reset to zero and the display is switched to the adjustment menu.

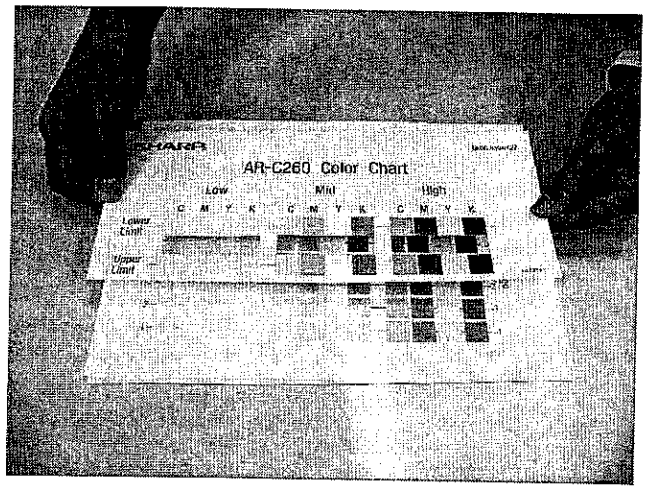
Test pattern

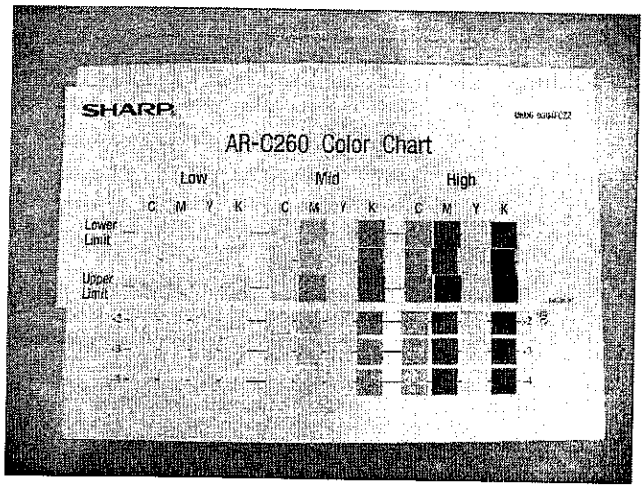


(Note) Use paper of the same or nearest color as the background color of the test chart (UKOG-0305FCZZ) as far as possible.

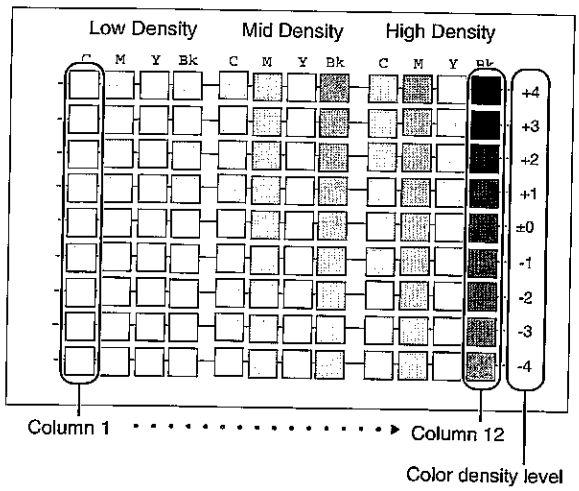
4) Collate the test chart (UKOG-0305FCZZ) and the test pattern patch density.

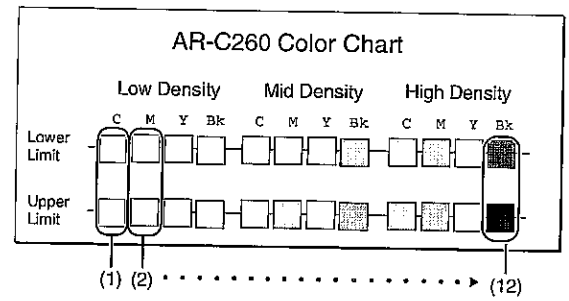
Place the test chart on the printed pattern so that the printed pattern can be seen from the cut sections. Put several sheets of white paper beneath the printed pattern.





5) Judge the color balance adjustment value with the following procedure.



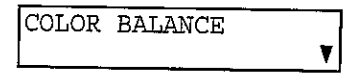


1. Check the test pattern array 1 to find a color patch corresponding to the intermediate level of the lower limit and the upper limit of Test chart (1).
2. Mark the above color patch.

   If there is no color patch corresponding to the above density in the test pattern array 1, perform the following procedures.

   - When the density of Test chart (1) is higher than the highest density (+4) of the array 1:
     → Put a mark on "+4" of the array 1.
   - When the density of Test chart (1) is lower than the lowest density (–4) of the array 1:
     → Put a mark on "–4" of the array 1.
3. Perform the same check for the densities of Test charts (2) – (12).
4. The density levels (+4 – –4) at the check marks (12 positions) on the test patterns are the adjustment values.

6) Set the adjustment values on the adjustment screen in the sequence of High, Medium, and Low density.

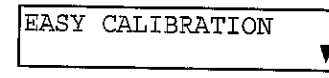


1. Select the color to be adjusted with [▲] [▼] keys and press the [OK] key. (CYAN, MAGENTA, YELLOW, BLACK)
2. The high density value (H) of the specified color flashes. Select the adjustment value (+4 – –4) with [▲] [▼] keys and press the [OK] key.
3. Then, the medium density value (M) flashes. Select the adjustment value (+4 – –4) with [▲] [▼] keys and press the [OK] key.
4. At last, the low density value (L) flashes. Select the adjustment value (+4 – –4) with [▲] [▼] keys and press the [OK] key.
5. The adjustment value setting of the specified color is completed with the above procedures, and the display returns to the initial state of the adjustment menu. If an adjustment is required for the other color, repeat the above operations 1 to 4.

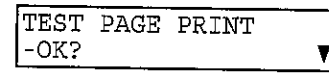
If there is no color patch in the test pattern corresponding to the intermediate level between the Lower Limit and the Upper Limit of Test chart in procedure 5), set the adjustment value to "+4" or "–4." In this case, repeat the color balance adjustment steps 1) – 6) until a suitable color patch can be found.

B. Easy calibration (Gray balance adjustment)

1) Select the EASY CALIBRATION mode with the key operator program.

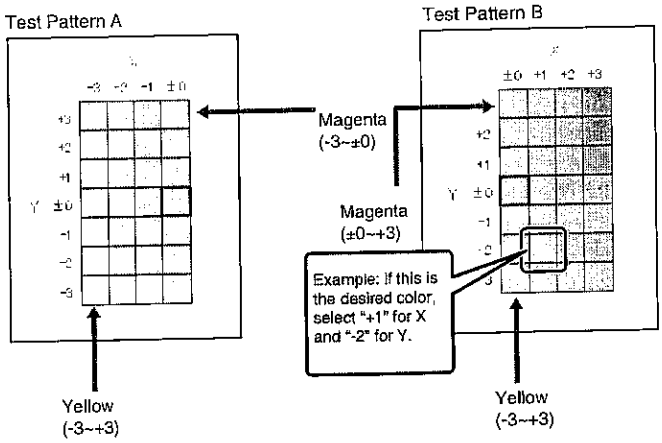


2) Press the [OK] key to switch to the TEST PAGE PRINT mode.



3) Select A4 or Letter size paper and press the [OK] key. The message of "PRINTING" is shown on the display, and the test pattern for image calibration is printed out.

When printing is performed, the display is switched to the adjustment menu.



The test patterns A and B show the process gray with the current adjustment value as the reference value (±0).

In the X-axis, the Magenta density is varied in 7 steps of –3 to +3. (Test pattern 2 in –3 to ±0, Test pattern 3 in ±0 to +3)

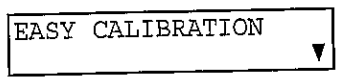
In the Y-axis, the Yellow density is varied in 7 steps of –3 to +3.

The Cyan density is fixed.

4) Select a desired color (gray level) on the printed test pattern, and check the adjustment value (scales on the X-axis and the Y-axis/–3 – +3) corresponding to the selected color (gray scale).

Note: If there is no suitable color on the test pattern, perform the adjustment in the color balance adjustment mode.

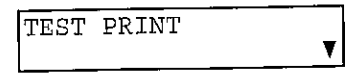
5) Set the adjustment values on the adjustment menu in the sequence of the X-axis then the Y-axis.



1. Enter the adjustment value (Magenta density/–3 – +3) for the X-axis with [▲] [▼] keys, and press the [OK] key.
2. Enter the adjustment value (Yellow density/–3 – +3) for the Y-axis with [▲] [▼] keys, and press the [OK] key.
3. The entered values are set and the display returns to the EASY CALIBRATION.

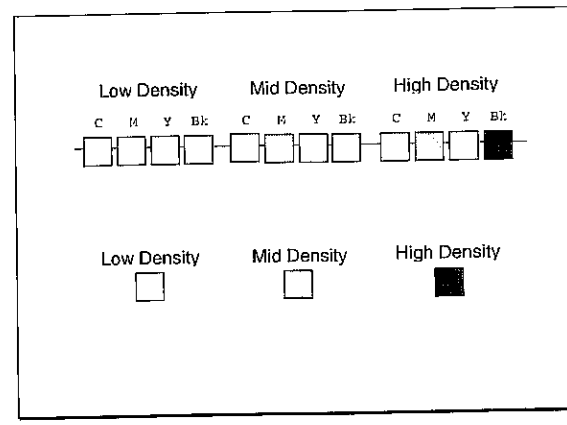
C. Color balance adjustment result check

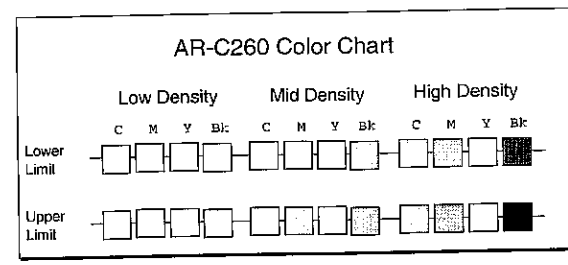
1) Change the mode to the TEST PRINT mode with the key operator program.



2) Select A4 or Letter size paper and press the [OK] key. The message of "PRINTING" is displayed and the test pattern for color balance check is printed out.

3) Check that each patch density on the printed test chart is at the center of the Lower Limit and the Upper limit of the test chart (UKOG-0305FCZZ).





[9] SIMULATION

(Diagnostics, setup, adjustment value input, data display)

1. Outline and purpose

The simulation has the following functions to grasp the machine operating status, identify the trouble position and causes in an earlier stage, and make various setups and adjustments speedily for improving the serviceability of the machine.

1) Various adjustments
2) Setup of specifications and functions
3) Canceling troubles
4) Operation check
5) Various counters check, setup, and clear
6) Machine operating status (operation history) data check, clear
7) Transfer of various data (adjustments, setup, operations, counters)

The operating procedures and the displays differ depending on the form of the operation panel of the machine.

2. Code-type simulation

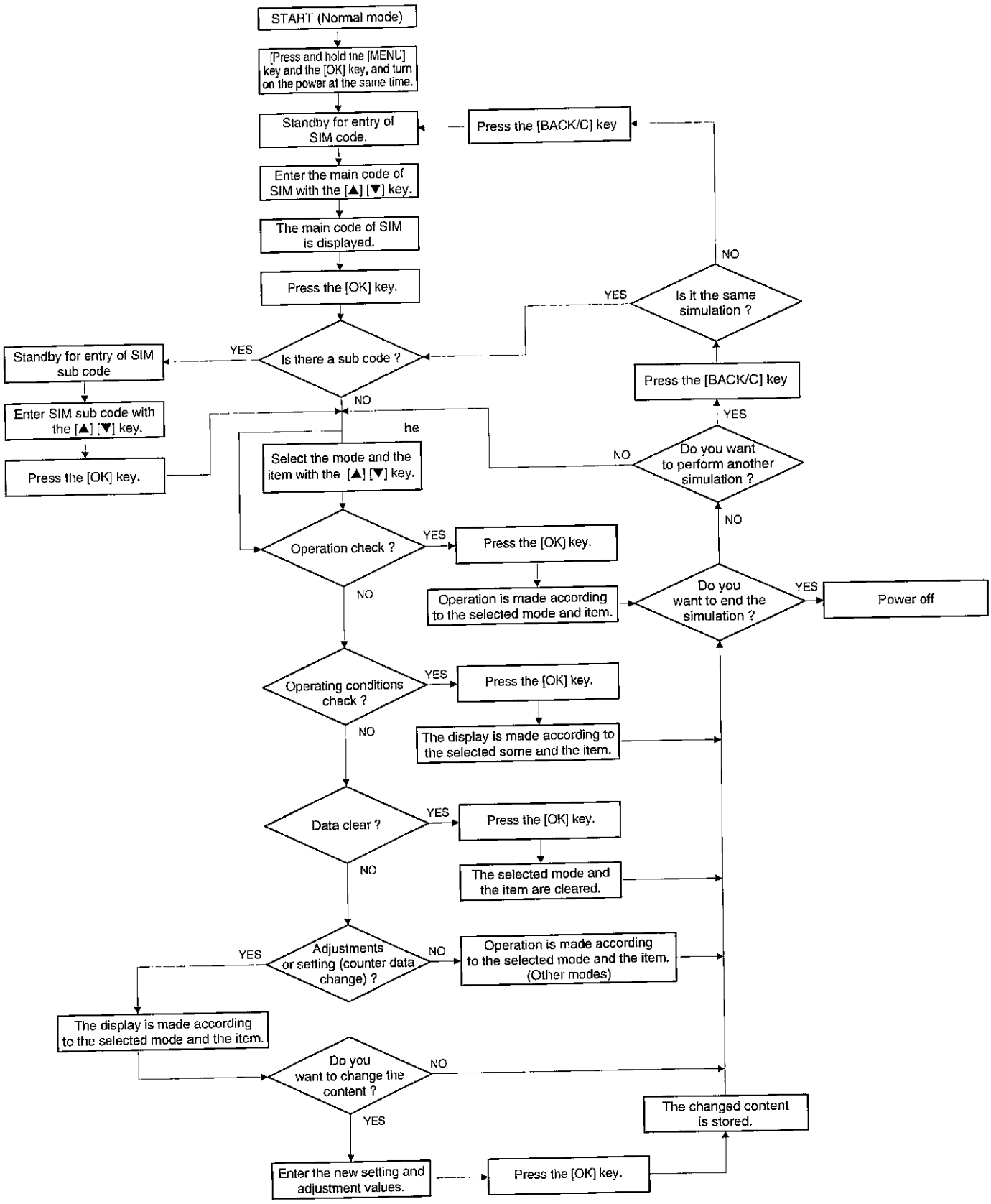
A. Operating procedures and operations

* Entering the simulation mode

1) Press and hold the [MENU] key and the [OK] key, and turn on the power at the same time.
2) Entering a main code with the [▲] [▼] key → [OK] key ON
3) Entering a sub code with the [▲] [▼] → [OK] key ON
4) Select an item with the [MENU] key.
5) The machine enters the mode corresponding to the selected item.
   Press [OK] key to start the simulation operation.
   To cancel the current simulation mode or to change the main code and the sub code, press the [BACK/C] key.

* Canceling the simulation mode to return to the normal mode

1) Power off.


START (Normal mode)
[Press and hold the [MENU] key and the [OK] key, and turn on the power at the same time.
Standby for entry of SIM code.
Press the [BACK/C] key
Enter the main code of SIM with the [▲] [▼] key.
The main code of SIM is displayed.
Press the [OK] key.
NO
YES
Is it the same simulation ?
Is there a sub code ?
YES
Standby for entry of SIM sub code
Enter SIM sub code with the [▲] [▼] key.
Press the [OK] key.
NO
Press the [BACK/C] key
YES
he
Select the mode and the item with the [▲] [▼] key.
NO
Do you want to perform another simulation ?
NO
Operation check ?
YES
Press the [OK] key.
NO
Operation is made according to the selected mode and item.
Do you want to end the simulation ?
YES
Power off
Operating conditions check ?
YES
Press the [OK] key.
NO
The display is made according to the selected some and the item.
Data clear ?
YES
Press the [OK] key.
NO
The selected mode and the item are cleared.
YES
Adjustments or setting (counter data change) ?
NO
Operation is made according to the selected mode and the item. (Other modes)
The display is made according to the selected mode and the item.
Do you want to change the content ?
NO
YES
The changed content is stored.
Enter the new setting and adjustment values.
Press the [OK] key.

B. Simulation list

(1) Main/ Sub

Code		Function (Purpose)	Purpose	Section		Item	
Main	Sub						
3	2	Used to check the operations of the sensors and detectors in the finisher and the related circuits.	Operation test/ check	Finisher		Operation	
	3	Used to check the loads in the finisher and the control circuit.	Operation test/ check	Finisher		Operation	
	10	Used to adjust the sections in the finisher.	Operation test/ check	Finisher		Operation	
4	2	Used to check the operations of the desk/large capacity tray sensors and detectors and the related circuits.	Operation test/ check	Paper feed		Operation	
	3	Used to check the operations of the desk/large capacity tray loads and the control circuit.	Operation test/ check	Paper feed		Operation	
	5	Response confirmation from DESK to TRC	Operation test/ check	Paper feed		Operation	
5	1	Used to check the operations of the display lamp (LED)/LCD on the operation panel and the control circuits.	Operation test/ check	Operation (Display, procedure)		Operation	
	2	Used to check the load operations of the heater lamp and its control circuit.	Operation test/ check	Fusing		Operation	
	4	Used to check the operations of the discharge lamp and its control circuit.	Operation test/ check	Process (Photoconductor, developing, transfer, cleaning)	Others	Operation	
6	1	Used to check the operations of the loads (clutches and solenoids) in the paper transport system, transfer, and fusing, and the control circuit.	Operation test/ check	Paper transport (paper exit, switchback, transport), transfer, fusing		Operation	
	2	Used to check the operations of the fan motors and the control circuits.	Operation test/ check	Others		Operation	
7	1	Aging operation mode setting	Setting/Operation test/check			Operation	
	6	Used to set the cycle of intermittent aging. The set value is valid only when SIM 07-01 INTERVAL (intermittent aging mode) is set to YES.	Setting/Operation test/check			Operation	
	8	Used to set Yes/No of warm-up time display.	Setting/Operation test/check			Operation	
	9	Specification of print color in the color mode	Operation test/ check	Others		Picture quality	
8	1	Used to check and adjust the operations of the developing bias voltage of each color and the control circuit.	Adjustment/ Operation test/ check	Process (Photoconductor, developing, transfer, cleaning)			
	2	Used to check and adjust the operation of the charging/grid output voltage in each print mode and the control circuit.	Adjustment/ Operation test/ check	Process (Photoconductor, developing, transfer, cleaning)			
	6	Used to check and adjust the operation of the transfer charger current in each print mode and the control circuit.	Adjustment/ Operation test/ check	Process (Photoconductor, developing, transfer, cleaning)		Transfer	

Code		Function (Purpose)	Purpose	Section		Item	
Main	Sub						
9	2	Used to check the operation of the sensors and detectors in the inverter/duplex section and the control circuit.	Operation test/ check	Inverter/Duplex		Operation	
	3	Used to check the operations of the loads (motor, clutch, solenoid) in the inverter/duplex section and the control circuits.	Operation test/ check	Inverter/Duplex		Operation	
14	0	Used to cancel self diag troubles H3, H4, and H5. Inhibition of the color copy mode operation is canceled.	Clear/cancel (Trouble etc.)			Trouble	Error
15	0	Self diag U6-09 (large capacity paper feed tray) trouble cancel	Clear/cancel (Trouble etc.)	Paper feed		Trouble	
16	0	Used to cancel self diag trouble U2.	Clear/cancel (Trouble etc.)			Trouble	Error
17	0	Cancel in the case of self diagnostic "PF" (when the copy inhibit signal is received from the host computer)	Clear/cancel (Trouble etc.)	Communication (RIC/ MODEM)		Trouble	Error
21	1	Used to set the maintenance cycle.	Setting			Specifications	Counter
22	1	Used to check the print count value in each section and each operation mode. (Used to check the maintenance timing.)	Adjustment/Setting/ Operation data output, check (display, print)			Counter	
	2	Used to check the total misfeed count and the total trouble count. (If the misfeed count is considerably great, it may be judged as necessary to repair. By dividing this count by the total count, the misfeed rate can be obtained.)	Adjustment/Setting/ Operation data output, check (display, print)			Trouble	
	3	Check the jam history of the machine. (jam position and number of jams) (When there are many jam errors, the judgment may be made that repair is required.	Adjustment/Setting/ Operation data output, check (display, print)			Trouble	Misfeed
	4	Used to check the total trouble (self diag) history.	Adjustment/Setting/ Operation data output, check (display, print)			Trouble	
	5	Used to check the ROM version of each unit (section).	Others			Software	
	6	Used to print the setting and adjustment data list.	Adjustment/Setting/ Operation data output, check (display, print)			Data	Setting/ Adjustment data
	7	Used to display the key operator code. (Used when the customer forgets the key operator code.)	User data output/ Check (Display/ Print)			Data	User data
	8	Used to check the number of uses of the staple, puncher, and the inverter.	Adjustment/Setting/ Operation data output, check (display, print)			Counter	
	9	Used to check the number of uses (print quantity) of each paper feed section.	Adjustment/Setting/ Operation data output, check (display, print)	Paper feed		Counter	
	10	Used to check the system configuration (option, internal hardware).	Adjustment/Setting/ Operation data output, check (display, print)			Specifications	Option

Code		Function (Purpose)	Purpose	Section		Item	
Main	Sub						
22	13	Used to check the process cartridge counter. (If the count number is considerably great, it may be judged as necessary for repair.)	Adjustment/Setting/ Operation data output, check (display, print)	Process section		Counter	
24	1	Used to clear the misfeed counter, the misfeed history, the trouble counter, and the trouble history. (After completion of maintenance, the counters are cleared.)	Data clear	Memory		Counter	
	2	Used to clear the data of the number of uses (print quantity) of each paper feed section.	Data clear	Paper feed		Counter	Paper feed unit
	3	Used to clear the use number data of the staple, the puncher and the inverter.	Data clear	Transport/Finisher		Counter	
	4	Used to reset the maintenance counter.	Data clear			Counter	Maintenance
	6	Used to clear the counters.	Data clear			Counter	
	7	The OPC drum/toner cartridge counter is cleared.	Data clear	Process (Photoconductor, developing, transfer, cleaning)	Photoconductor	Counter	Photoconductor
	8	Used to clear the waste toner counter in the transfer section.	Data clear	Process (Photoconductor, developing, transfer, cleaning)	Transfer	Counter	
	9	Used to clear the printer mode counter and the self-print mode print counter. (After completion of maintenance, the counters are cleared.)	Data clear	Printer		Counter	Printer
25	1	Used to check the drum operation and the toner remaining quantity sensor operation. (The toner remaining quantity sensor output can be monitored.)	Operation test/ check	Process (Photoconductor, developing, transfer, cleaning)		Operation	
26	2	1. Used to set the paper size of the large capacity tray. (When the paper size is changed, the software setup must be changed accordingly with this simulation.) 2. Used to detect 8.5" x 13" (INCH Series) paper or documents and to set the display mode. (All paper feed modes) 3. Used to set the display form of the paper kind in the manual paper feed mode.	Setting	Paper feed		Specifications	
	5	Used to set the count mode of the total counter and the maintenance counter. When a copy is made on A3, 3 x 17, A3 wide, 12 x 18 size, the count-up amount (1 or 2) of the total counter and the maintenance counter cam be set. The set items are as follows:	Setting			Specifications	Counter

Code		Function (Purpose)	Purpose	Section		Item	
Main	Sub					Specifications	Destination
26	6	Used to set the destination specifications (paper, fixed copy magnification ratios, image (process) correction, machine operation in case of an error, etc.).	Setting				
	18	Used to set YES/NO of toner save operation. (This simulation is Enable only for Japan and UK versions. It depends on SIM 26-6 (Destination) setting. For the other destinations, the same setting can be made by the user program. (Effective only in the monochrome copy mode)	Setting			Specifications	Operation mode (Common)
	35	Used to set whether the trouble history display by SIM 22-4 is displayed as one trouble or as the accumulated number of continuous troubles when two or more troubles of same kind occur continuously.	Setting			Specifications	
	38	Used to set "Continue/ Discontinue" of printing when toner life is reached.	Setting			Specifications	
	52	Used to set YES/NO of count up of non-copy paper (cover or insertion paper).	Setting			Specifications	Operation mode
	57	Used to set the model name for use as the status information. Can be set only for the destination of Japan.	Setting			Specifications	
	65	Used to set the finisher alarm mode.	Setting			Specifications	
	69	The print conditions when toner near end are set. (When the toner cartridge is emptied.)	Setting			Specifications	
27	1	Used to set the specifications for operations in case of communication trouble between the host computer and MODEM (machine side). (When communication trouble occurs between the host computer MODEM and the machine, the self diag display (U7-00) is printed and setting for inhibition of print or not is made.)	Operation test/ check	Communication (RIC/ MODEM)		Specifications	Operation mode (Common)
	5	Used to enter the machine tag No. (This function allows to check the tag No. of the machine with the host computer.)	Setting	Communication (RIC/ MODEM)		Data	User data
30	1	Used to check the operation of sensors and detectors in the paper feed, paper transport, paper exit sections and the related circuits.	Operation test/ check			Operation	
	2	Used to check the operation of sensors and detectors in the paper feed section and the related circuits. (The operation of the paper feed sensors and detectors can be monitored with the LCD display.)	Operation test/ check	Paper feed		Operation	

Code		Function (Purpose)	Purpose	Section		Item	
Main	Sub						
40	1	Used to check the operation of the manual feed tray paper size detector and the related circuit. (The operation of the manual feed tray paper size detector can be monitored with the LCD display.)	Operation test/ check	Paper feed		Operation	
	2	Check the max./min. AD value of the manual feed tray paper width to adjust the detection level.	Adjustment	Paper feed		Operation	
	7	Check the max./min. AD value of the manual feed tray paper width to adjust the detection level. This simulation is not normally used. (Adjustment is made with SIM 40-02.)	Setting	Paper feed		Specifications	
43	1	Used to set the fusing temperature in each operation mode.	Setting	Fixing (Fusing)		Operation	
44	1	Used to set enable/disable of correction operations in the image forming (process) section.	Setting	Process (Photoconductor, developing, transfer, cleaning)		Operation	
	2	Black image density sensor adjustment and belt 1 surface reading	Adjustment			Operation	
	4	Image forming section correction, image density sensor adjustment conditions setup	Setting	Process (Photoconductor, development, transfer)		Picture quality	
	6	Used to forcibly execute the image forming section correction (high density process correction) (process correction).	Operation test/ check	Process (Photoconductor, developing, transfer, cleaning)		Operation	
	9	Used to check the data related to the image forming section correction (the corrected main charger grid voltage in each print mode, the developing bias voltage, etc.). (Used to check that correction is performed normally or not.)	Adjustment/Setting/ Operation data output, check (display, print)	Process (Photoconductor, developing, transfer, cleaning)		Data	Operation data (Machine conditions)
	12	Used to check the sampling toner image patch density data in the image forming section correction (high-density correction) (process correction). This simulation allows to check if the correction operation is performed normally.)	Adjustment/Setting/ Operation data output, check (display, print)	Process (Photoconductor, developing, transfer, cleaning)		Data	Operation data (Machine conditions)
	13	Color image density sensor adjustment (Adjustment by the adjustment jig)	Adjustment	Process (Transfer)			
44	14	Used to monitor the output level of the fusing temperature sensor, the machine temperature sensor, and the humidity sensor.	Adjustment/Setting/ Operation data output, check (display, print)	Others			
	36	Color image density sensor and black image density sensor adjustment (simple adjustment)	Adjustment	Process (Transfer)			
48	6	Used to adjust each motor RPM.	Adjustment			Operation	

Code		Function (Purpose)	Purpose	Section		Item	
Main	Sub						
49	1	Used for firmware version up (Machine).	Version up	Firmware (Machine)		Operation	
	2	Used to set the data communication speed in version up of the machine firmware.	Version up	Firmware		Operation	
	10	Used for firmware version up (Desk unit).	Version up	Firmware (Desk unit)		Operation	
50	5	Used to adjust the image position and print area in the sub scanning direction. (Print engine section)	Adjustment	ICU/Printer		Picture quality	
	10	Used to adjust the print image center position. (Adjustment is performed in each paper feed position separately.)	Adjustment	Image process (ICU)		Picture quality	Image position
	20	Used to adjust the image registration. (Manual adjustment)	Adjustment			Picture quality	Image position
	22	Used to adjust the image registration. (Automatic adjustment)	Adjustment			Picture quality	Image position
	24	Used to display the adjustment data of automatic registration.	Adjustment			Picture quality	Image position
51	1	Used to adjust the transfer voltage ON timing.	Adjustment	Process (Photoconductor, developing, transfer, cleaning)	Transfer	Operation	
	2	Used to adjust the contact pressure of paper on the resist roller of each section (each paper feed and duplex feed of the copier). (This adjustment is required when the print image position variations are considerably great or when paper jams occur frequently.)	Adjustment	Paper transport (Paper exit, switchback, transport)		Operation	
52	1	Used to adjust the duplex print mode stacking capacity (Used to adjust the stop position of the duplex unit paper tray width alignment plate. The home position of the width alignment plate is changed by software.)	Adjustment	Duplex		Operation	
61	4	Used to adjust the LED unit skew.	Adjustment	Scanner (writing)		Operation	
64	1	Used to adjust the operations of the printer section (self-print operation/color). (The print pattern, paper feed mode, print mode, print quantity, and density can be changed optionally.)	Operation test/ check	Printer		Operation	
64	3	Used to check the operations of the printer section (self-print operation/BW). (The print pattern, the paper feed mode, the print mode, the print quantity, and the density can be set optionally.)	Operation test/ check	Printer		Operation	
64	4	Used to check the operations of the printer section (self-print operation/color). (The print pattern, the paper feed mode, the print mode, the print quantity, and the density can be set optionally.)	Operation test/ check	Printer		Operation	

Code		Function (Purpose)	Purpose	Section		Item	
Main	Sub						
67	1	Used to check the operations of printer DRAM read/write.	Operation test/ check	Printer		Operation	
	11	Used to set the printer parallel I/F SELECT IN signal.	Setting	Printer		Operation	
	14	Used to perform version up of the firmware. (Printer)	Version up	Firmware (Printer)		Operation	
	17	Used to clear NVRAM. (Printer)	Data clear	Printer		Others	
	18	Used to clear the Flash data. (Printer)	Data clear	Printer		Others	

C. Details

3

3 -2

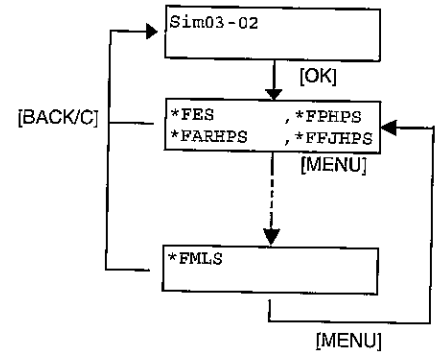
Purpose	Operation test/check
Function (Purpose)	Used to check the operations of the sensors and detectors in the finisher and the related circuits.
Section	Finisher
Item	Operation
Operation/ Procedure	1. Select the sensor to be detected with the [MENU] key. 2. When the sensor is active, "*" is displayed in each section of the sensors on the display.

(Sensors to be detected)

[When the finisher is installed]

FES	Inlet sensor
FPHPS	Paddle HP sensor
FARHPS	Bundle roller HP sensor
FFJHPS	Alignment HP sensor (F)
FRJHPS	Alignment HP sensor (R)
FAS	Alignment tray sensor
FOBHPS	Paper exit belt HP sensor
FBES	Tray paper sensor
FSLS	Paper surface sensor
FFPS	Binding position sensor
FFHPS	Binding HP sensor
FFRHPS	Binding roller HP sensor
FFES	Binding paper sensor
FFE	Binding clock sensor
FULS	Lift upper limit sensor
FLLS	Lift lower limit sensor
FLE	Lift clock sensor
FSHPS	Slide HP sensor
FSTHPS	Stapler HP sensor
FSS	Needle sensor
FSUC	Stapler connection
FSPS	Self prime sensor
FFDS	Front door sensor
FCS	Upper cover sensor
FFDSW	Front door switch
FJS	Joint switch
FSSS	Stapler safety switch
FPTS	Punch timing sensor
FPSS1	Punch side resist sensor 1
FPSS2	Punch side resist sensor 2
FPSS3	Punch side resist sensor 3
FPSS4	Punch side resist sensor 4
FPDS	Punch dust sensor
FPUC	Punch connection
FPSHPS	Punch side resist home position

FPE	Punch motor encoder
FMLS	Lift intermediate sensor



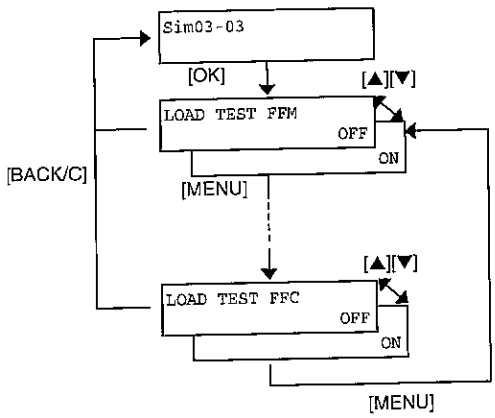
3 -3

Purpose	Operation test/check
Function (Purpose)	Used to check the loads in the finisher, sorter and the control circuit.
Section	Finisher
Item	Operation
Operation/ Procedure	1. Select the load to be checked with the [MENU] key. 2. When [▲] key is pressed, the display is turned ON and the selected load is operated. 3. When a negative output is detected, the DATA LED flashes. 4. When [▼] key is pressed, the display is turned OFF and the selected load is stopped.

(Loads to be selected)

[When the finisher is installed]

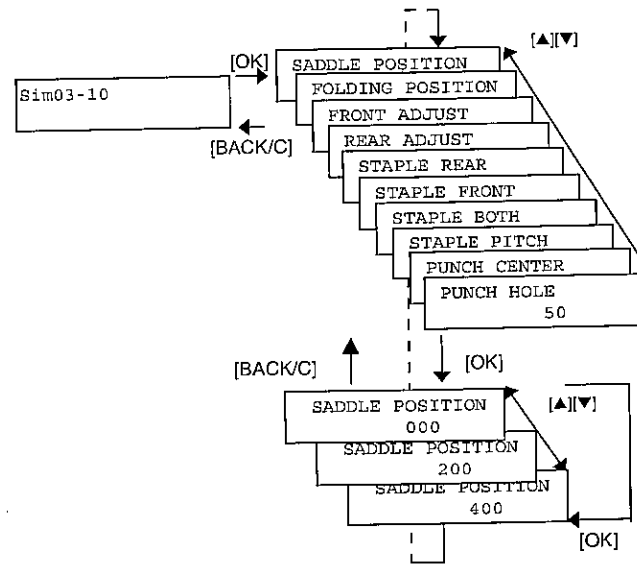
FFM	Transport motor	FFSM	Stapler motor
FPM	Paddle motor	FLM	Shift motor
FAM	Bundle exit motor	FPNM	Punch motor
FFJM	Alignment motor (F)	FPSM	Puncher side resist motor
FRJM	Alignment motor (R)	FFC	Folding clutch
FSM	Slide motor		



3 -10

Purpose	Operation test/check
Function (Purpose)	Used to adjust the sections in the finisher.
Section	Finisher
Item	Operation
Operation/ Procedure	1. Select the adjustment item with [▲] [▼] keys and press the [OK] key to set. 2. Adjust each digit of the set value with [▲] [▼] keys and press the [OK] key to set.

	Item	Set range	Initial value
A	Saddle binding position adjustment	0 – 400	200
B	Saddle folding position adjustment	0 – 400	200
C	Front alignment position adjustment	0 – 20	10
D	Rear alignment position adjustment	0 – 20	10
E	Staple rear one-point binding position adjustment	0 – 200	100
F	Staple front one-point binding position adjustment	0 – 200	100
G	Staple two-point binding center adjustment	0 – 200	100
H	Staple two-point binding pitch adjustment	0 – 100	50
I	Punch center adjustment	47 – 53	50
J	Punch hole position adjustment	0 – 100	50



4

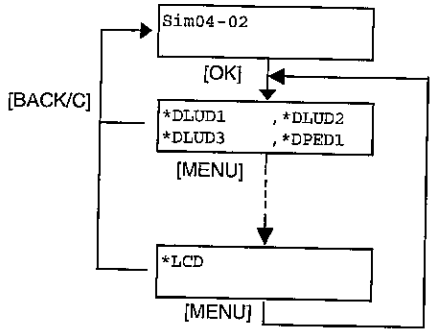
4 -2

Purpose	Operation test/check
Function (Purpose)	Used to check the operations of the desk/large capacity tray sensors and detectors and the related circuits.
Section	Paper feed
Item	Operation
Operation/ Procedure	1. Select the sensor to be detected with the [MENU] key. 2. When the sensor is active, "*" is displayed in each section of the sensors on the display.

(Sensors to be detected)

DLUD1	Desk 1cs upper limit detection
DLUD2	Desk 2cs upper limit detection
DLUD3	Desk 3cs upper limit detection
DPED1	Desk 1cs paper empty detector
DPED2	Desk 2cs paper empty detection
DPED3	Desk 3cs paper empty detection
DCSPS1	Desk 1cs remaining quantity detection
DCSPS2	Desk 2cs remaining quantity detection
DCSPS3	Desk 3cs remaining quantity detection
DPPD1	Desk paper transport detection 1
DPPD2	Desk paper transport detection 2
DPPD3	Desk paper transport detection 3
DLUID1	Desk 1cs lift unit installation detection
DLUID2	Desk 2cs lift unit installation detection
DLUID3	Desk 3cs lift unit installation detection
DDOPD	Desk door open detection
DCSS11	Desk 1cs paper size detection 1
DCSS12	Desk 1cs paper size detection 2
DCSS13	Desk 1cs paper size detection 3
DCSS14	Desk 1cs paper size detection 4
DCSS21	Desk 2cs paper size detection 1
DCSS22	Desk 2cs paper size detection 2
DCSS23	Desk 2cs paper size detection 3
DCSS24	Desk 2cs paper size detection 4
DCSS31	Desk 3cs paper size detection 1
DCSS32	Desk 3cs paper size detection 2
DCSS33	Desk 3cs paper size detection 3
DCSS34	Desk 3cs paper size detection 4
LRE	LCC remaining quantity detection
LUD	LCC upper limit detection

LDD	LCC lower limit detection
LPED	LCC paper empty detection
LPFD	LCC paper exit detection
LDSW	LCC door open detection
LTOD	LCC release detection
24V	LCC 24V detection
LCD	LCC cassette detection



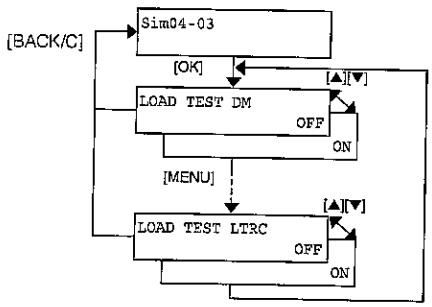
4 -3

Purpose	Operation test/check
Function (Purpose)	Used to check the operations of the desk/large capacity tray loads and the control circuit.
Section	Paper feed
Item	Operation
Operation/ Procedure	1. Select the load to be checked with the [MENU] key. 2. When [▲] key is pressed, the display is turned ON and the selected load is operated.

3. When a negative output is detected, the DATA LED flashes.
4. When [▼] key is pressed, the display is turned OFF and the selected load is stopped.

(Loads to be selected)

DM	Desk transport motor
DLM1	Desk 1cs lift-up motor
DLM2	Desk 2cs lift-up motor
DLM3	Desk 3cs lift-up motor
DPFC1	Desk 1cs paper feed clutch
DPFC2	Desk 2cs paper feed clutch
DPFC3	Desk 3cs paper feed clutch
DTRC	Desk transport clutch
DPFS1	Desk 1cs paper feed solenoid
DPFS2	Desk 2cs paper feed solenoid
DPFS3	Desk 3cs paper feed solenoid
LPFM	LCC transport motor
LLM	LCC lift motor up-down operation
LPFC	LCC paper feed clutch
LPFS	LCC paper feed solenoid
LLED	LCC door open LED
LTRC	LCC transport clutch

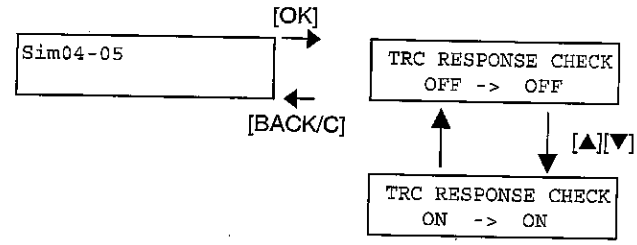


4 -5

Purpose	Operation test/check
Function (Purpose)	Response confirmation from DESK to TRC
Section	Paper feed
Item	Operation
Operation/ Procedure	ON/OFF on the display: The left side shows the load operation of TRC, and the right side shows the response state from DESK to TRC.

Used to check whether the response state to TRC is switched in linkage with turning on the load operation of TRC with [▲] [▼] keys.

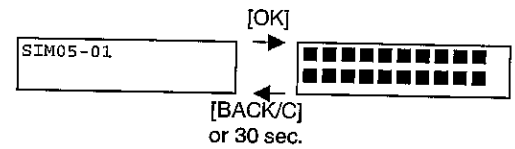
- When there is a response to TRC: ON → ON
- When there is no response to TRC: ON → OFF



5

5 -1

Purpose	Operation test/check
Function (Purpose)	Used to check the operations of the display lamp (LED)/ LCD on the operation panel and the control circuits.
Section	Operation (Display, procedure)
Item	Operation
Operation/ Procedure	When this simulation is executed, the LCD and the LED on the operation panel are lighted for 30sec.

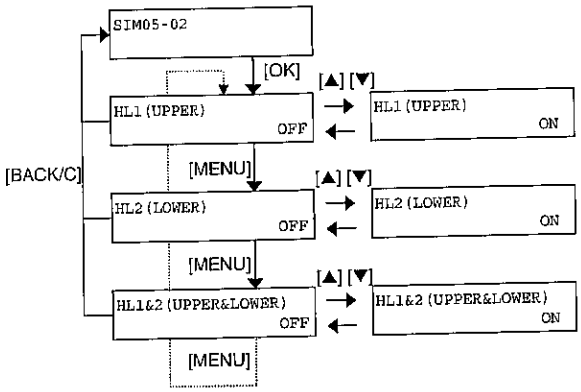


5 -2

Purpose	Operation test/check
Function (Purpose)	Used to check the load operations of the heater lamp and its control circuit.
Section	Fusing
Item	Operation
Operation/ Procedure	1. Select the lamp to be checked with the [MENU] key. 2. When the [▲] [▼] key is pressed, the display is turned on and the specified lamp repeats ON/OFF every 500ms.

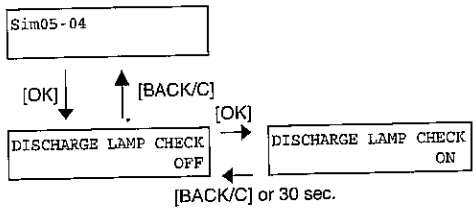
3. When ON/OFF is repeated 10 times, the lamp turns off and the display automatically turns off.
   To terminate the operation of ON/OFF, press the [UP/DOWN] key.

HL1 (UPPER)	Upper heater lamp load operation check
HL2 (LOWER)	Lower heater lamp negative load operation check
HL1&2 (UPPER & LOWER)	Upper/lower heater lamp load operation check



5 -4	
Purpose	Operation test/check
Function (Purpose)	Used to check the operations of the discharge lamp and its control circuit.
Section	Process (Photoconductor, developing, transfer, cleaning) Others
Item	Operation
Operation/ Procedure	1. When the [OK] key is pressed, DATA LED flashes and the discharge lamps of all colors are lighted for 30sec.

2. To interrupt the operation check, press the [BACK/C] key.



6

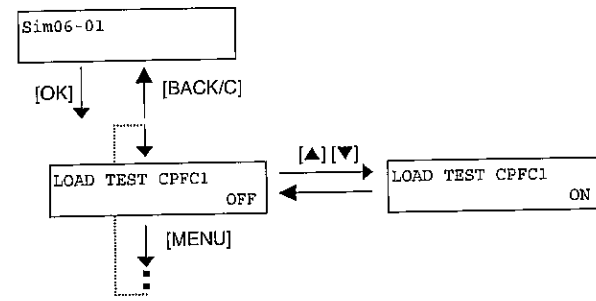
6 -1	
Purpose	Operation test/check
Function (Purpose)	Used to check the operations of the loads (clutches and solenoids) in the paper transport system, transfer, and fusing, and the control circuit.
Section	Paper transport (paper exit, switchback, transport), transfer, fusing
Item	Operation
Operation/ Procedure	1. Select the load to be checked with the [MENU] key. 2. When [▲] key is pressed, the display is turned ON and the selected load is operated.

3. When a negative output is detected, the DATA LED flashes.
4. When [▼] key is pressed, the display is turned OFF and the selected load is stopped.

(Loads to be selected)

CPFC 1	Cassette paper feed clutch
TRC	Transport clutch
MTRC	Manual paper feed clutch 1
MPFC	Manual paper feed clutch 2
GSS	Paper exit gate select solenoid
RRM	Resist roller motor (PSM)
PFM	Paper feed motor (Vertical transport)
FUM	Fusing motor
BLUM	Lift motor
BLUM (R)	* Lift motor (Reverse rotation: Waste toner transport motor)
OSM	Offset motor (Job separator)
CARB	Calibration plate

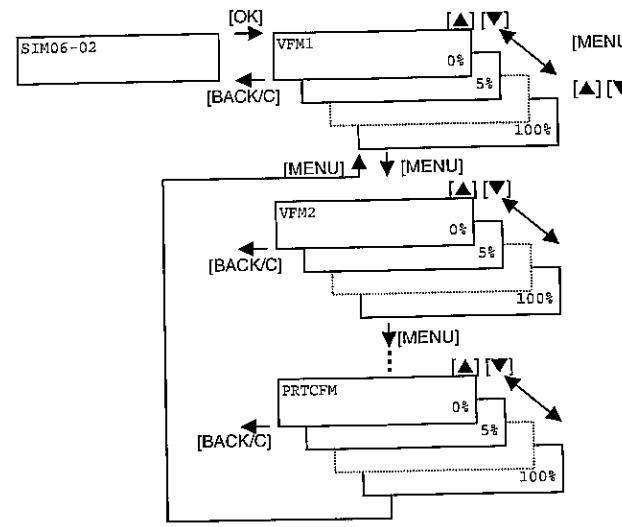
MAN_PL (L) Paper feed motor correction value (Postcard paper feed)
Paper feed motor correction value (DESK paper feed)
Paper feed motor correction value (LCC paper feed)



6 -2	
Purpose	Operation test/check
Function (Purpose)	Used to check the operations of the fan motors and the control circuits.
Section	Others
Item	Operation
Operation/ Procedure	1. Select the fan to be checked with the [MENU] key. 2. Set the output duty with the [▲] [▼] key in 5% increment and check that DATA LED flashes.

(Loads to be selected.)

VFM1	Fusing exhaust fan 1
VFM2	Fusing exhaust fan 2
PSFM	Power exhaust fan
PRTCFM	Process exhaust fan



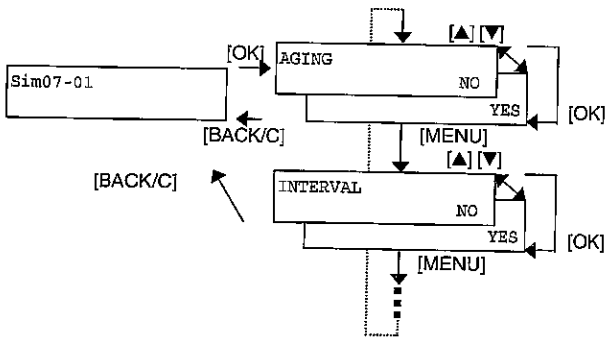
7

7 -1	
Purpose	Setting/Operation test/check
Function (Purpose)	Aging operation mode setting
Item	Operation
Operation/ Procedure	1. Select the item to be set with the [MENU] key. 2. Select YES/NO of the mode setting and press the [OK] key to set. • NO: Mode is set. • YES: Toner save mode is not set.

* The set content is not saved in the EEPROM and erased when the power is turned off.

(Set content)

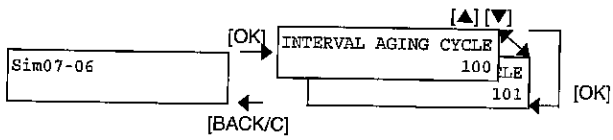
Item	Descriptions	Set value	Default
AGING	Aging mode setting	YES/NO	NO
INTERVAL	Intermittent aging mode setting	YES/NO	NO
MISFEED DISABLE	Jam detection YES/NO setup	YES/NO	NO
FUSING DISABLE	Fusing operation YES/NO setting	YES/NO	NO
WARMUP DISABLE	Warm-up YES/NO setting	YES/NO	NO
DV CHECK DISABLE	Developing tank detection YES/NO setup	YES/NO	NO



7 -6

Purpose	Setting/Operation test/check
Function (Purpose)	Used to set the cycle of intermittent aging. The set value is valid only when SIM 07-01 INTERVAL (intermittent aging mode) is set to YES.
Item	Operation
Operation/ Procedure	1. Set the frequency with [▲] [▼] keys. (1 – 900sec, Default: 3) 2. Press the [OK] key to set the value.

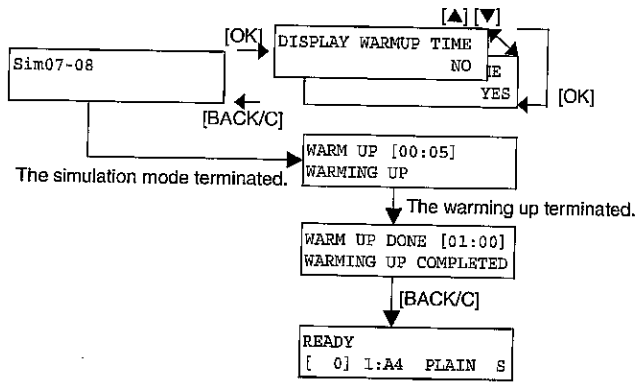
* The set value is not saved in the EEPROM and erased when the power is turned off.



7 -8

Purpose	Setting/Operation test/check
Function (Purpose)	Used to set Yes/No of warm-up time display.
Item	Operation
Operation/ Procedure	1. Set YES/NO of the display with [▲] [▼] keys and press the [OK] key to set.

2. When the machine is rebooted after completion of the simulation mode, the warm-up time and the end time are displayed.
3. The set content is not saved in the EEPROM and erased when the power is turned off.

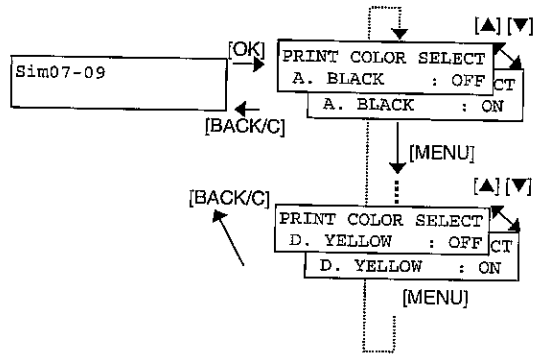


7 -9

Purpose	Setting/Operation test/check
Function (Purpose)	Specification of print color in the color mode
Section	Others
Item	Picture quality
Operation/ Procedure	1. Select the print color with the [MENU] key. 2. Set ON/OFF of print colors with [▲] [▼] keys.

	Item	Set range	Default
A	BLACK	ON/OFF	OFF
B	CYAN	ON/OFF	OFF
C	MAGENTA	ON/OFF	OFF
D	YELLOW	ON/OFF	OFF

* When all the print color specifications are OFF, all the color are specified.



8

8 -1

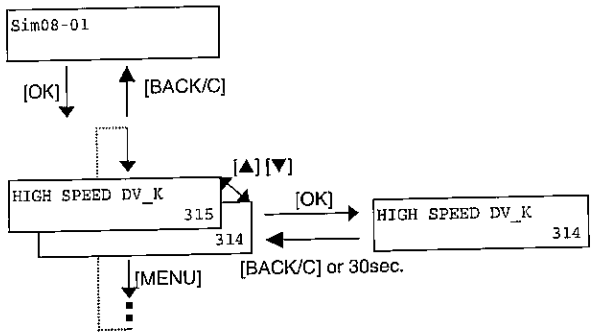
Purpose	Adjustment/Operation test/check
Function (Purpose)	Used to check and adjust the operations of the developing bias voltage of each color and the control circuit.
Section	Process (Photoconductor, developing, transfer, cleaning)
Operation/ Procedure	1. Select the print mode with the [MENU] key. 2. Set the bias voltage with [▲] [▼] keys.

3. When the [OK] key is pressed, the set value is set and the specified voltage is outputted for 30sec.
   During output of the voltage, the DATA LED flashes.
4. To interrupt the voltage output, press the [BACK/C] key.

(Set value)

Item	Display item	Descriptions of item content	Set range	Default
1	HIGH SPEED DV_K	K color developing bias set value at high speed (140mm/s)	0 – 585	315
2	MIDDLE SPEED DV_K	K color developing bias set value at the intermediate speed (117mm/s)	0 – 585	315
3	LOW SPEED DV_K	K color developing bias set value at the low speed (58.5mm/s)	0 – 585	285
4	MIDDLE SPEED DV_C	C color developing bias set value at the intermediate speed (117mm/s)	0 – 585	265
5	LOW SPEED DV_C	C color developing bias set value at the low speed (58.5mm/s)	0 – 585	235
6	MIDDLE SPEED DV_M	M color developing bias set value at the intermediate speed (117mm/s)	0 – 585	265
7	LOW SPEED DV_M	M color developing bias set value at the low speed (58.5mm/s)	0 – 585	235
8	MIDDLE SPEED DV_Y	Y color developing bias set value at the intermediate speed (117mm/s)	0 – 585	240
9	LOW SPEED DV_Y	Y color developing bias set value at the low speed (58.5mm/s)	0 – 585	210

Actually it is of negative polarity and the actual output range is –0V to –585V.



8 -2

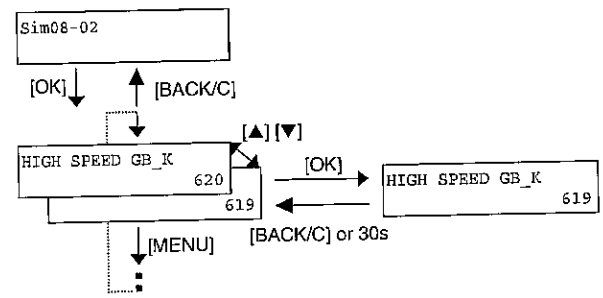
Purpose	Adjustment/Operation test/check
Function (Purpose)	Used to check and adjust the operation of the charging/ grid output voltage in each print mode and the control circuit.
Section	Process (Photoconductor, developing, transfer, cleaning)
Operation/ Procedure	1. Select the print mode with the [MENU] key. 2. Set the bias voltage with [▲] [▼] keys.

3. When the [OK] key is pressed, the set value is set and the specified voltage is outputted for 30sec.
   During output of the voltage, the DATA LED flashes.
4. To interrupt the voltage output, press the [BACK/C] key.

(Set value)

Item	Display item	Descriptions of item content	Set range	Default
1	HIGH SPEED GB_K	K color charging/grid bias set value at high speed (140mm/s)	180 – 700	620
2	MIDDLE SPEED GB_K	K color charging/grid bias set value at the intermediate speed (117mm/s)	180 – 700	620
3	LOW SPEED GB_K	K color charging/grid bias set value at the low speed (58.5mm/s)	180 – 700	590
4	MIDDLE SPEED GB_C	C color charging/grid bias set value at the intermediate speed (117mm/s)	180 – 700	620
5	LOW SPEED GB_C	C color charging/grid bias set value at the low speed (58.5mm/s)	180 – 700	590
6	MIDDLE SPEED GB_M	M color charging/grid bias set value at the intermediate speed (117mm/s)	180 – 700	620
7	LOW SPEED GB_M	M color charging/grid bias set value at the low speed (58.5mm/s)	180 – 700	590
8	MIDDLE SPEED GB_Y	Y color charging/grid bias set value at the intermediate speed (117mm/s)	180 – 700	620
9	LOW SPEED GB_Y	Y color charging/grid bias set value at the low speed (58.5mm/s)	180 – 700	590

Actually it is of negative polarity and the actual output range is –180V to –700V.



8 -6

Purpose	Adjustment/Operation test/check
Function (Purpose)	Used to check and adjust the operation of the transfer charger current in each print mode and the control circuit.
Section	Process (Photoconductor, developing, transfer, cleaning) Transfer
Operation/ Procedure	1. Select the print mode with the [MENU] key. 2. Set the bias voltage with [▲] [▼] keys.

3. When the [OK] key is pressed, the set value is set and the specified voltage is outputted for 30sec.
   During output of the voltage, the DATA LED flashes.
4. To interrupt the voltage output, press the [BACK/C] key.

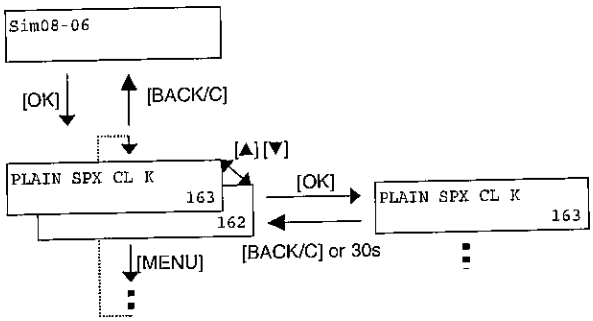
(Items to be selected/replaced)

※ (During output of the voltage, the drum motor and the belt motor are driven at the belt lower limit position. (Drum damage prevention measures)

Item	Display item	Descriptions of item content	Set range	Actual output setting range	Default	Initial value actual output value
1	PLAIN SPX CL K	K color transfer set value in the color mode normal paper front surface	51 – 255	0 – 4000	173	2200
2	PLAIN DPX CL K	K color transfer set value in the color mode normal paper back surface	51 – 255	0 – 4000	188	2500
3	OHP1 CL K	K color transfer set value in the color mode OHP1	51 – 255	0 – 4000	204	3000
4	OHP2 CL K	K color transfer set value in the color mode OHP2	51 – 255	0 – 4000	137	1700
5	HEAVY P1 SPX CL K	K color transfer set value in the color mode heavy paper 1 front surface	51 – 255	0 – 4000	158	1900

Item	Display item	Descriptions of item content	Set range	Actual output setting range	Default	Initial value actual output value
6	HEAVY P1 DPX C K	K color transfer set value in the color mode heavy paper 1 back surface	51 – 255	0 – 4000	188	2500
7	HEAVY P2 CL K	K color transfer set value in the color mode heavy paper 2	51 – 255	0 – 4000	173	2200
8	ENVELOPE CL K	K color transfer set value in the color mode envelope	51 – 255	0 – 4000	163	2200
9	PLAIN SPX C	C color transfer set value in the color mode normal paper front surface	51 – 255	0 – 4500	159	2200
10	PLAIN DPX C	C color transfer set value in the color mode normal paper back surface	51 – 255	0 – 4500	173	2500
11	OHP1 C	C color transfer set value in the color mode OHP1	51 – 255	0 – 4500	187	3000
12	OHP2 C	C color transfer set value in the color mode OHP2	51 – 255	0 – 4500	150	2200
13	HEAVY P1 SPX C	C color transfer set value in the color mode heavy paper 1 front surface	51 – 255	0 – 4500	146	1900
14	HEAVY P1 DPX C	C color transfer set value in the color mode heavy paper 1 back surface	51 – 255	0 – 4500	173	2500
15	HEAVY P2 C	C color transfer set value in the color mode heavy paper 2	51 – 255	0 – 4500	159	2200
16	ENVELOPE C	C color transfer set value in the color mode envelope	51 – 255	0 – 4500	150	2200
17	PLAIN SPX M	M color transfer set value in the color mode normal paper front surface	51 – 255	0 – 6000	132	2200
18	PLAIN DPX M	M color transfer set value in the color mode normal paper back surface	51 – 255	0 – 6000	142	2500
19	OHP1 M	M color transfer set value in the color mode OHP1	51 – 255	0 – 6000	153	3000
20	OHP2 M	M color transfer set value in the color mode OHP2	51 – 255	0 – 6000	153	3000
21	HEAVY P1 SPX M	M color transfer set value in the color mode heavy paper 1 front surface	51 – 255	0 – 6000	122	1900
22	HEAVY P1 DPX M	M color transfer set value in the color mode heavy paper 1 back surface	51 – 255	0 – 6000	142	2500
23	HEAVY P2 M	M color transfer set value in the color mode heavy paper 2	51 – 255	0 – 6000	132	2200
24	ENVELOPE M	M color transfer set value in the color mode envelope	51 – 255	0 – 6000	125	2200
25	PLAIN SPX Y	Y color transfer set value in the color mode normal paper front surface	51 – 255	0 – 6000	132	2200
26	PLAIN DPX Y	Y color transfer set value in the color mode normal paper back surface	51 – 255	0 – 6000	142	2500
27	OHP1 Y	Y color transfer set value in the color mode OHP1	51 – 255	0 – 6000	153	3000
28	OHP2 Y	Y color transfer set value in the color mode OHP2	51 – 255	0 – 6000	163	3300
29	HEAVY P1 SPX Y	Y color transfer set value in the color mode heavy paper 1 front surface	51 – 255	0 – 6000	122	1900
30	HEAVY P1 DPX Y	Y color transfer set value in the color mode heavy paper 1 back surface	51 – 255	0 – 6000	142	2500
31	HEAVY P2 Y	Y color transfer set value in the color mode heavy paper 2	51 – 255	0 – 6000	132	2200
32	ENVELOPE Y	Y color transfer set value in the color mode envelope	51 – 255	0 – 6000	125	2200
33	PLAIN SPX BW K	K color transfer set value in the black and white mode normal paper front surface	51 – 255	0 – 4000	178	2300
34	PLAIN DPX BW K	K color transfer set value in the black and white mode normal paper back surface	51 – 255	0 – 4000	178	2500
35	OHP1 BW K	K color transfer set value in the black and white mode HP1	51 – 255	0 – 4000	204	3000
36	OHP2 BW K	K color transfer set value in the black and white mode HP2	51 – 255	0 – 4000	137	1700
37	HEAVY P1 SPX BW K	K color transfer set value in the black and white mode heavy paper 1 front surface	51 – 255	0 – 4000	147	1900
38	HEAVY P1 DPX BW K	K color transfer set value in the black and white mode heavy paper 1 back surface	51 – 255	0 – 4000	178	2500
39	HEAVY P2 BW K	K color transfer set value in the black and white mode heavy paper 2	51 – 255	0 – 4000	163	2200
40	ENVELOPE BW K	K color transfer set value in the black and white mode envelope	51 – 255	0 – 4000	168	2300

When the value is changed by 1, the actual output is changed by about 19.6V for K, about 22.1V for C, about 29.4V for M, and about 29.4V for Y.



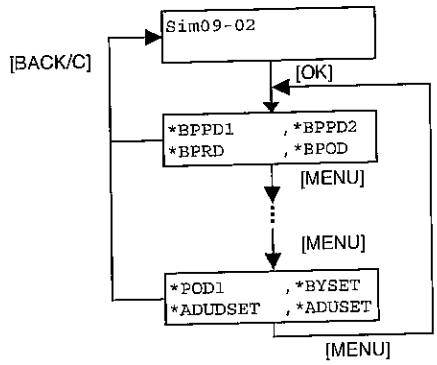
9

9 -2

Purpose	Operation test/check
Function (Purpose)	Used to check the operation of the sensors and detectors in the inverter/duplex section and the control circuit.
Section	Inverter/Duplex
Item	Operation
Operation/ Procedure	1. Select the sensor to be detected with the [MENU] key. 2. When the sensor is active, "*" is displayed in each section of the sensors on the display.

(Check item)

BPPD1	Inverter transport detection 1
BPPD2	Inverter transport detection 2
BPRD	Inverter reverse detection
BPOD	Inverter paper exit detection
BPFD	Inverter full detection
BDD1	Inverter door detection 1
BDD2	Inverter door detection 2
APPD1	ADU transport detection 1
APPD2	ADU transport detection 2
APHPS	ADU alignment plate home position
POD1	Machine paper exit detection
BYSET	Inverter installation detection
ADUDSET	ADU installation detection
ADUSET	ADU door open/close detection

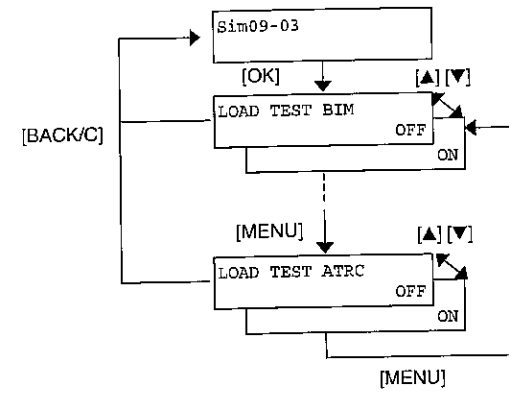


9 -3

Purpose	Operation test/check
Function (Purpose)	Used to check the operations of the loads (motor, clutch, solenoid) in the inverter/duplex section and the control circuits.
Section	Inverter/Duplex
Item	Operation
Operation/ Procedure	1. Select the load to be checked with the [MENU] key. 2. When [▲] key is pressed, the display is turned ON and the selected load is operated. 3. When a negative output is detected, the DATA LED flashes. 4. When [▼] key is pressed, the display is turned OFF and the selected load is stopped.

BIM	Inverter paper entry motor
BRMFW	Inverter reverse motor (Normal rotation)
BRMRV	Inverter reverse motor (Reverse rotation)
BGSOL	Inverter gate solenoid
BTMFW	Inverter transport motor (Normal rotation)
BTMRV	Inverter transport motor (Reverse rotation)
ATM	ADU transport motor
APAM	ADU alignment motor
ATRC	ADU transport clutch

BRMFW•BRMRV•BTMFW•BTMRV cannot be turned ON at the same time because they are forward/reverse rotation of one motor. If two are set to ON at the same time, the one which was set to ON first is forcibly set to OFF.



14

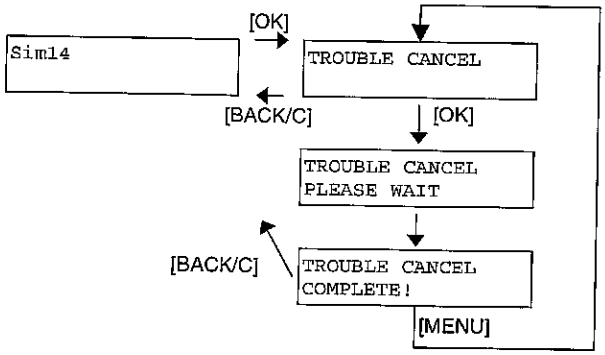
14 -0

Purpose	Clear/cancel (Trouble etc.)
Function (Purpose)	Used to cancel self diag troubles H3, H4, and H5. Inhibition of the color copy mode operation is canceled.
Item	Trouble Error
Operation/ Procedure	1. When the [OK] key is pressed, the following troubles are canceled. 2. During the process, the display shows the message of "PLEASE WAIT" and the DATA LED flashes. In case of an error, the ERROR LED turns on. During the process, all the keys are invalid.

(Trouble codes to be canceled)

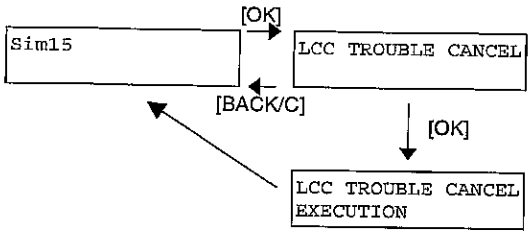
Target trouble codes	Descriptions
H3-00	Heat roller high temperature detection (HL1)
H3-01	Heat roller high temperature detection (HL2)
H4-00	Heat roller low temperature detection (HL1)
H4-01	Heat roller low temperature detection (HL2)
H5-01	Five continuous detections of POD1 not-reached jam

* These trouble states are stored even though the power is OFF.



15

15 -0	
Purpose	Clear/cancel (Trouble etc.)
Function (Purpose)	Self diag U6-09 (large capacity paper feed tray) trouble cancel
Section	Paper feed
Item	Trouble Error
Operation/ Procedure	1. When the [OK] key is pressed, the LCC lift-up trouble is canceled. 2. During the process, the DATA LED and the EXCUTION flash.



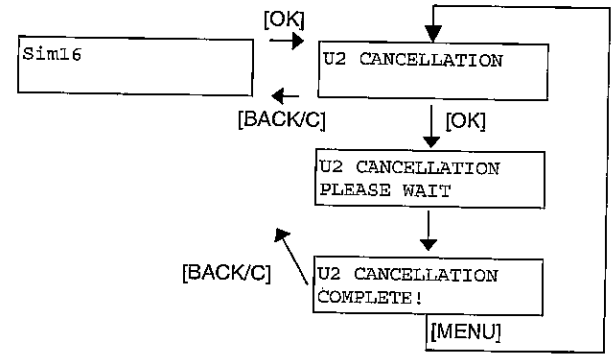
16

16 -0	
Purpose	Clear/cancel (Trouble etc.)
Function (Purpose)	Used to cancel self diag trouble U2.
Item	Trouble Error
Operation/ Procedure	1. When the [OK] key is pressed, the following troubles are canceled. 2. During the process, the display shows the message of "PLEASE WAIT" and the DATA LED flashes. In case of an error, the ERROR LED turns on. During the process, all the keys are invalid.

(Trouble codes to be canceled)

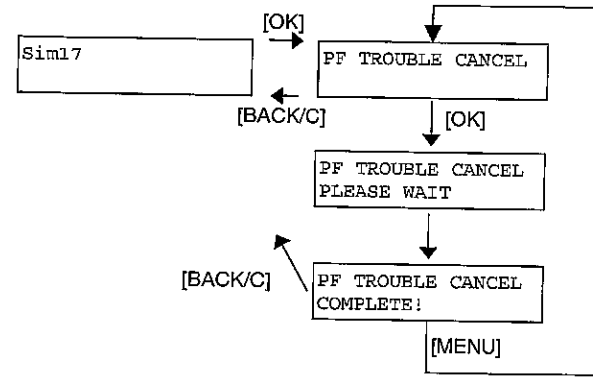
Target trouble codes	Descriptions
U2-00	EEPROM read/write error (OPE)
U2-11	EEPROM check sum error (OPE)
U2-80	EEPROM read/write error (SCN)
U2-81	EEPROM check sum error (SCN)
U2-90	EEPROM read/write error (PCU)
U2-91	EEPROM check sum error (PCU)

* These trouble states are stored even though the power is OFF.



17

17 -0	
Purpose	Clear/cancel (Trouble etc.)
Function (Purpose)	Cancel in the case of self diagnostic "PF" (when the copy inhibit signal is received from the host computer)
Section	Communication (RIC/MODEM)
Item	Trouble Error
Operation/ Procedure	1. When the [OK] key is pressed, the PF trouble is canceled. 2. During the process, the display shows the message of "PLEASE WAIT" and the DATA LED flashes. In case of an error, the ERROR LED turns on. During the process, all the keys are invalid.

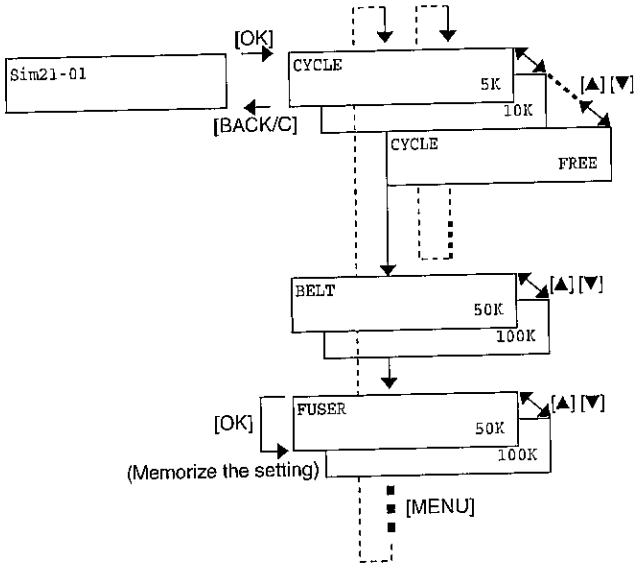


21

21 -1	
Purpose	Setting
Function (Purpose)	Used to set the maintenance cycle.
Item	Specifications Counter
Operation/ Procedure	1. Select the cycle with the [MENU] key. 2. Press the [OK] key to set. The LED turns on, not flashes.

Display	Set value	Kind
CYCLE	0	5K
	1	10K
	2	15K
	3	40K
	4	50K (default)
	5	100K
	6	FREE
BELT	50	50K
	100	100K (default)

Display	Set value	Kind
FUSER	50	50K
	100	100K (default)



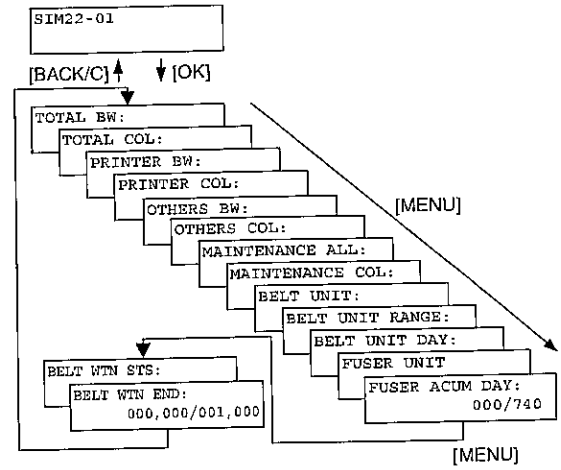
22

22 -1

Purpose	Adjustment/Setting/Operation data output and check (display, print)
Function (Purpose)	Used to check the print count value in each section and each operation mode. (Used to check the maintenance timing.)
Item	Counter
Operation/ Procedure	Select the display counter with the [MENU] key.

(Counter values to be displayed)

TOTAL BW	All valid paper counters (B/W)
TOTAL COL	All valid paper counters (Color)
PRINTER BW	Print counter (B/W)
PRINTER COL	Print counter (Color)
OTHERS BW	Other counter (B/W)
OTHERS COL	Other counter (Color)
MAINTENANCE ALL	Maintenance counter (Total)
MAINTENANCE COL	Maintenance counter (Color)
BELT UNIT	Transfer unit print counter
BELT UNIT RANGE	Transfer unit accumulated mileage
BELT UNIT DAY	Transfer unit use days
FUSER UNIT	Fusing unit print counter
FUSER ACUM DAY	Fusing unit use days
BELT WTN STS	Transfer exhaust toner full status NONE: No detection (0x00) FULL: Full detection (0x11)
BELT WTN END	Print count after NEAR the numerator comes 0, when BELT WTN STS is NONE.

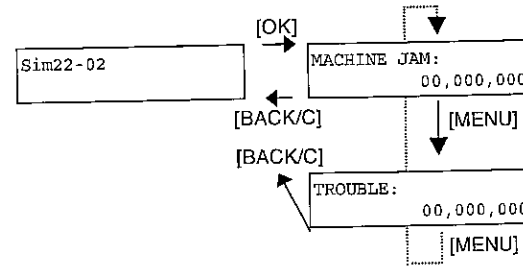


22 -2

Purpose	Adjustment/Setting/Operation data output, check (display, print)
Function (Purpose)	Used to check the total misfeed count and the total trouble count. (If the misfeed count is considerably great, it may be judged as necessary to repair. By dividing this count by the total count, the misfeed rate can be obtained.)
Item	Trouble
Operation/ Procedure	Select the display counter with the [MENU] key.

(Counter value to be displayed)

Display	Content
MACHINE JAM	Jam counter (Machine)
TROUBLE	Trouble counter (ICU)



22 -3

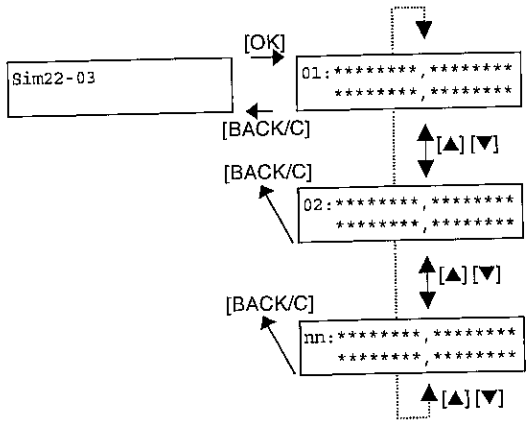
Purpose	Adjustment/Setting/Operation data output, check (display, print)
Function (Purpose)	Check the jam history of the machine. (jam position and number of jams) (When there are many jam errors, the judgment may be made that repair is required.
Item	Trouble Misfeed
Operation/ Procedure	1. Max. 50 items of jam history are saved (the oldest one is deleted sequentially). 4 items of jam history are displayed at a time on the display.

2. The display history can be shifted backward and forward with [▲] [▼] keys.

(Jam code list)

Group	Sensor	Display	Comment
	-	********	
Paper feed system	PFD1	TRAY1	Tray 1 paper feed jam (PFD1 not-reached)
		PFD1_ND1	PFD1 not-reached jam (Desk 1 feed paper)
		PFD1_ND2	PFD1 not-reached jam (Desk 2 feed paper)
		PFD1_ND3	PFD1 not-reached jam (Desk 3 feed paper)
		PFD1_NDU	PFD1 not-reached jam (Desk duplex tray feed paper)
		PFD1_ST1	PFD1 remaining jam (Tray 1 feed paper)
		PFD1_SD1	PFD1 remaining jam (Desk 1 feed paper)
		PFD1_SD2	PFD1 remaining jam (Desk 2 feed paper)
		PFD1_SD3	PFD1 remaining jam (Desk 3 feed paper)
		PFD1_SDU	PFD1 remaining jam (ADU feed paper)
Paper feed system	PPD1	PPD1_NT1	PPD1 not-reached jam (Tray 1 feed paper)
		PPD1_ND1	PPD1 not-reached jam (Desk 1 feed paper)
		PPD1_ND2	PPD1 not-reached jam (Desk 2 feed paper)
		PPD1_ND3	PPD1 not-reached jam (Desk 3 feed paper)
		PPD1_NDU	PPD1 not-reached jam (ADU tray feed paper)
		PPD1_ST1	PPD1 remaining jam (Tray 1 feed paper)
		PPD1_SD1	PPD1 remaining jam (Desk 1 feed paper)
		PPD1_SD2	PPD1 remaining jam (Desk 2 feed paper)
		PPD1_SD3	PPD1 remaining jam (Desk 3 feed paper)
		PPD1_SDU	PPD1 remaining jam (ADU feed paper)
Paper feed system	PPD2	BPT	Manual feed tray paper feed jam (PPD2 not-reached)
		PPD2_NT1	PPD2 not-reached jam (Tray 1 feed paper)
		PPD2_ND1	PPD2 not-reached jam (Desk 1 feed paper)
		PPD2_ND2	PPD2 not-reached jam (Desk 2 feed paper)
		PPD2_ND3	PPD2 not-reached jam (Desk 3 feed paper)
		PPD2_NDU	PPD2 not-reached jam (ADU feed paper)
		PPD2_NLC	PPD2 not-reached jam (LCC feed paper)
		PPD2_BPT	PPD2 remaining jam (Manual paper feed tray feed paper)
		PPD2_ST1	PPD2 remaining jam (Tray 1 feed paper)
		PPD2_SD1	PPD2 remaining jam (Desk 1 feed paper)
		PPD2_SD2	PPD2 remaining jam (Desk 2 feed paper)
		PPD2_SD3	PPD2 remaining jam (Desk 3 feed paper)
		PPD2_SDU	PPD2 remaining jam (ADU feed paper)
		PPD2_SLC	PPD2 remaining jam (LCC feed paper)
Transport system	PPD2	PPD2_PRE	PPD2 jam (Image ready signal is not supplied from ICU.)
		PPD2_PRI	PPD2 jam (Print request is not supplied from ICU.)
	POD1	POD1_N	POD1 not-reached jam
		POD1_S	POD1 remaining jam
	POD2	POD2_N	POD2 not-reached jam
		POD2_S	POD2 remaining jam
Desk	DPPD1	DPPD1_N	Desk transport sensor 1 (DPPD1) not-reached jam
		DPPD1_S	Desk transport sensor 1 (DPPD1) remaining jam
	DPPD2	DPPD2_N	Desk transport sensor 2 (DPPD2) not-reached jam
		DPPD2_S	Desk transport sensor 2 (DPPD2) remaining jam
Desk	DPPD3	DPPD3_N	Desk transport sensor 3 (DPPD3) not-reached jam
		DPPD3_S	Desk transport sensor 3 (DPPD3) remaining jam
LCC	LPFD	LCC	LCC paper feed jam (LPFD not-reached)
		LPFD_S	LCC unit LPFD remaining jam
Inverter	BPPD1	BPPD1_N	Inverter transport sensor 1 (BPPD1) not-reached jam
		BPPD1_S	Inverter transport sensor 1 (BPPD1) remaining jam
	BPPD2	BPPD2_N	Inverter transport sensor 2 (BPPD2) not-reached jam
		BPPD2_S	Inverter transport sensor 2(BPPD2) remaining jam
	BPOD	BPOD_N	Inverter paper exit sensor (BPOD) not-reached jam
		BPOD_S	Inverter paper exit sensor (BPOD) remaining jam
	BPRD	BPRD_N	Inverter reverse sensor (BPRD) not-reached jam
		BPRD_S	Inverter reverse sensor (BPRD) remaining jam

Group	Sensor	Display	Comment
ADU	APPD1	APPD1_N	ADU transport sensor 1 (APPD1) not-reached jam
		APPD1_S	ADU transport sensor 1 (APPD1) remaining jam
	APPD2	APPD2_N	ADU transport sensor 2 (APPD2) not-reached jam
		APPD2_S	ADU transport sensor 2 (APPD2) remaining jam
Finisher	FES	FES_N	Inlet port sensor (FES) not-reached jam
		FES_S	Inlet port sensor (FES) remaining jam
	FFPS	FFPS_N	Binding position sensor (FFPS) not-reached jam
		FFPS_S	Binding position sensor (FFPS) remaining jam
	FSTPL	FSTPL	Staple (FSTPL) jam
	FPNCH	FPNCH	Punch (FPNCH) jam
	FDOP	FDOP	Door open (FDOP) jam
	FPUSH	FPUSH	Bundle roller pinching (FPUSH) jam
Sorter	SPPD	SPPD_N	Sorter transport sensor (SPPD) not-reached jam
		SPPD_S	Sorter transport sensor (SPPD) remaining jam
	SDOP	SDOP	Sorter door open (SDOP) jam



22 -4

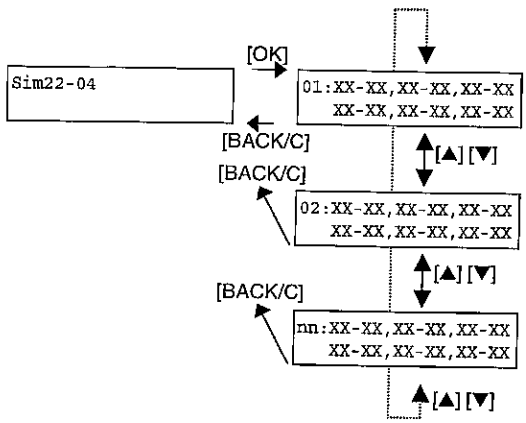
Purpose	Adjustment/Setting/Operation data output, check (display, print)
Function (Purpose)	Used to check the total trouble (self diag) history.
Item	Trouble
Operation/ Procedure	1. Max. 30 items of jam history are saved (the oldest one is deleted sequentially). 6 items of jam history are displayed from the newest one at a time on the display.

2. The display history can be shifted backward and forward with [▲] [▼] keys.

(Trouble code list)

Main code	Sub code	Content
C2	10	Image density sensor error/Transfer charger error (Black)
E7	01	Image data memory trouble
	07	ICU gate array abnormality
	20	LED controller initial trouble (Black)
	21	LED controller initial trouble (Cyan)
	22	LED controller initial trouble (Magenta)
	23	LED controller initial trouble (Yellow)
	24	LED controller output trouble (Black)
	25	LED controller output trouble (Cyan)
	26	LED controller output trouble (Magenta)
	27	LED controller output trouble (Yellow)
	28	LED control ASIC connection abnormality
	40	Color correction data writing abnormality
	41	Color correction data transfer abnormality
	90	ICU-PCU communication trouble (ICU detection)
F1	00	Finisher communication trouble (PCU detection)
	02	Finisher transport motor trouble (Finisher detection)
	03	Finisher paddle motor trouble
	06	Finisher slide motor trouble
	10	Finisher staple motor abnormality (Finisher detection)
	11	Finisher bundle process motor abnormality (Finisher detection)
	15	Finisher tray lift motor abnormality (Finisher detection)
	19	Finisher front alignment motor abnormality (Finisher detection)
	20	Finisher rear alignment motor abnormality (Finisher detection)
	31	Finisher fold sensor trouble
	32	Finisher punch unit communication trouble
	33	Finisher punch side registration motor trouble
	34	Finisher punch motor trouble
	35	Finisher punch side registration sensor trouble
	36	Finisher punch registration sensor trouble
	37	Finisher/sorter backup RAM trouble
	38	Finisher punch backup RAM trouble
	39	Finisher punch dust sensor trouble
	40	Finisher punch power disconnection trouble
	83	Guide bar oscillation motor (M3) lock
	89	Bin shift motor (M1) lock
	91	Bin paper sensor automatic adjustment trouble
F2	39	Process thermistor breakdown
	40	Toner empty sensor abnormality (Black)
	41	Toner empty sensor abnormality (Cyan)
	42	Toner empty sensor abnormality (Magenta)
	43	Toner empty sensor abnormality (Yellow)
	44	Black image density sensor trouble (Transfer belt surface reflection ratio abnormality)
	45	Color image density sensor trouble (Calibration plate surface reflection ratio abnormality)
	58	Process humidity sensor breakdown
	70	Developing unit improper cartridge detection (Black)
	71	Developing unit improper cartridge detection (Cyan)
	72	Developing unit improper cartridge detection (Magenta)
	73	Developing unit improper cartridge detection (Yellow)
	74	Developing unit CRUM trouble (Black)
	75	Developing unit CRUM trouble (Cyan)
	76	Developing unit CRUM trouble (Magenta)
	77	Developing unit CRUM trouble (Yellow)
	78	Trouble of image density sensor for registration (Transfer belt surface reflection ratio abnormality)
F3	12	Cassette 1 lift up trouble

Main code	Sub code	Content
F9	00	ICU-PRT communication trouble (ICU detection)
	01	PRT DRAM trouble
	03	NIC port check error
	20	HDD trouble (PRT controller detection)
H2	00	Thermistor open (HL1)
	01	Thermistor open (HL2)
H3	00	Fusing section high temperature trouble (HL1)
	01	Fusing section high temperature trouble (HL2)
H4	00	Fusing section low temperature trouble (HL1)
	01	Fusing section low temperature trouble (HL2)
H5	01	Five continuous detections of POD1 not-reached jam
L4	02	Paper feed motor lock trouble
	06	Transfer belt lift motor trouble
	07	Transfer belt motor trouble
	11	Shift motor trouble
L8	01	Full wave signal not provided
	02	Full wave signal width abnormality
	04	Main power switch abnormality detection
PF	00	RIC copy inhibit signal reception
U1	02	RTC read trouble
U2	00	EEPROM read/write error (ICU detection)
	11	EEPROM check sum error (ICU detection)
	22	SRAM memory check sum error
	30	Production No. data discrepancy (ICU ↔ ICU)
	90	EEPROM read/write error (PCU detection)
	91	EEPROM check sum error (PCU detection)
U4	02	ADU alignment plate operation abnormality
U6	00	Desk communication trouble
	01	Desk tray 1 lift motor trouble
	02	Desk tray 2 lift motor trouble
	03	Desk tray 3 lift motor trouble
	09	LCC lift motor trouble
	10	Desk transport motor trouble
	20	LCC communication trouble
	21	LCC transport motor trouble
	22	LCC 24V power abnormality
U7	00	RIC communication trouble

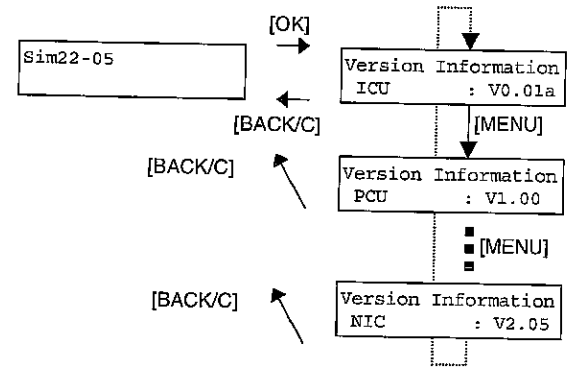


22 -5

Purpose	Others
Function (Purpose)	Used to check the ROM version of each unit (section).
Item	Software
Operation/ Procedure	Specify the section with the [MENU] key to check the ROM version. (The option version is displayed only when connected.) If there is any problem in the program, use this simulation to check the ROM version of each section and replace the ROM if necessary.

(Sections to be displayed)

ICU	ICU control section
PCU	Engine control section
BOOT	PRT boot
PRT	PRT control section
FIN/SORTER	Finisher/Sorter
PUNCH	Punch unit
DSK	Desk
LCC	Large capacity cassette
NIC	NIC
PS	Postscript



22 -6

Purpose	Adjustment/Setting/Operation data output, check (display, print)
Function (Purpose)	Used to print the setting and adjustment data list.
Item	Data Setting/Adjustment data
Operation/ Procedure	When installing or servicing, execute this simulation to print and store the adjustment values and setting data for use in the next servicing. (Memory trouble, PWB replacement, etc.)

At that time, the print conditions can be set arbitrarily

1. Press the [MENU] key to change the display from the execution menu → Tray selection → Data selection.
2. The following operation can be made in each menu.

	[▲] [▼] keys	[OK] key
Execution screen		Print execution
Tray selection menu	Set content display	Set content updating
Data selection menu		

3. To interrupt printing, press the [BACK/C] key.

*1: When the machine is ready (pre-heating completed, PRT controller communication established), the READY LAMP lights up.

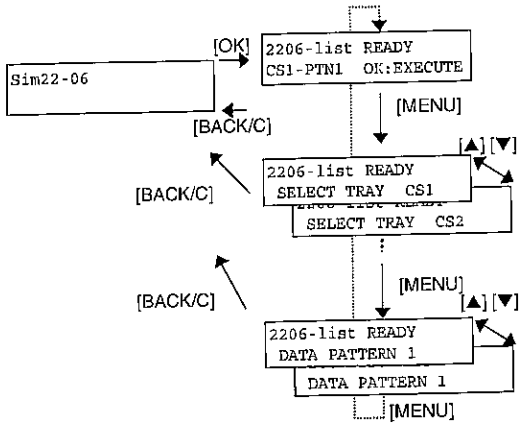
*2: During list printing, the DATA LED flashes.

*3: If list printing is disabled, when the [OK] key is pressed, the ERROR LED turns on. (0.5sec)

- Tray abnormality such as paper empty
- Paper exit port full
- Insufficient toner

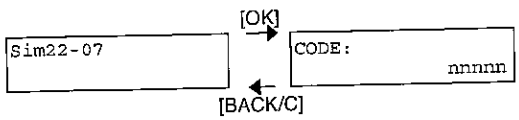
Item	Display item	Low	High	Default	Description
A	SELECT TRAY	1	6	2	Cassette selection
	1 MFT				Manual feed
	2 CS1				Cassette 1
	3 CS2				Cassette 2
	4 CS3				Cassette 3
	5 CS4				Cassette 4
	6 LCC				LCC

Item	Display item	Low	High	Default	Description
B	DATA PATTERN	1	1	1	Data pattern selection
	= 1				Pattern No. is set to 120.



22 -7

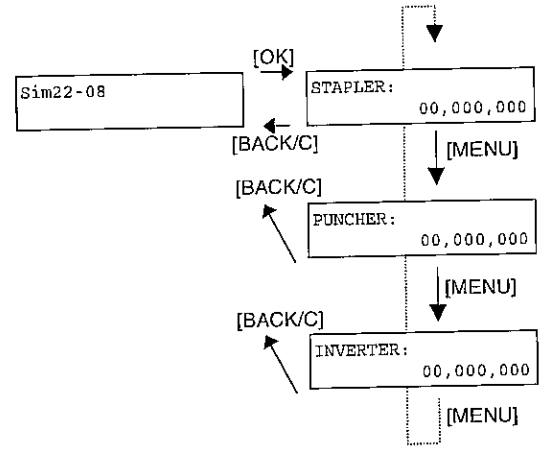
Purpose	User data output/Check (Display/Print)
Function (Purpose)	Used to display the key operator code. (Used when the customer forgets the key operator code.)
Item	Data User data
Operation/ Procedure	The key operator code is displayed.



22 -8

Purpose	Adjustment/Setting/Operation data output, check (display, print)
Function (Purpose)	Used to check the number of uses of the staple, puncher, and the inverter.
Item	Counter
Operation/ Procedure	Select the display counter with the [MENU] key. This data is used to check the use frequency of each section. According to this data, maintenance is executed. (Counter values to be displayed with this simulation)

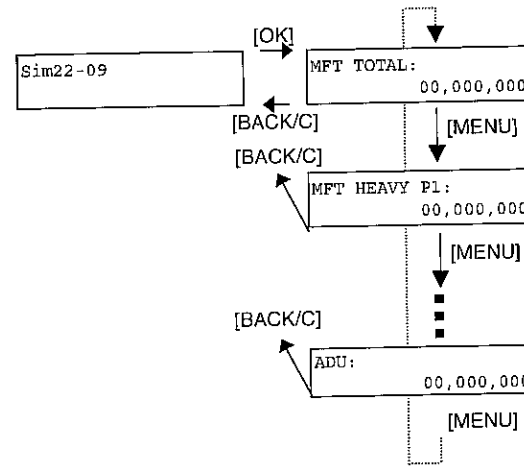
Display	Content
STAPLER	Staple counter
PUNCHER	Puncher counter
INVERTER	Reverse unit counter



22 -9

Purpose	Adjustment/Setting/Operation data output, check (display, print)
Function (Purpose)	Used to check the number of uses (print quantity) of each paper feed section.
Section	Paper feed
Item	Counter
Operation/ Procedure	Select the display counter with the [MENU] key. This data is used to check the use frequency of each paper feed section. According to this data, maintenance is performed. (Counter values to be displayed with this simulation)

Display	Content
MFT TOTAL	Manual paper feed (total) counter
MFT HEAVY P1	Manual paper feed (heavy paper 1) counter
MFT HEAVY P2	Manual paper feed (heavy paper 2) counter
MFT OHP1	Manual paper feed (OHP1) counter
MFT OHP2	Manual paper feed (OHP2) counter
MFT ENV	Manual paper feed (Envelope) counter
TRAY1	Tray 1 counter
TRAY2	Tray 2 counter
TRAY3	Tray 3 counter
TRAY4	Tray 4 counter
LCC	LCC counter
ADU	Duplex unit counter



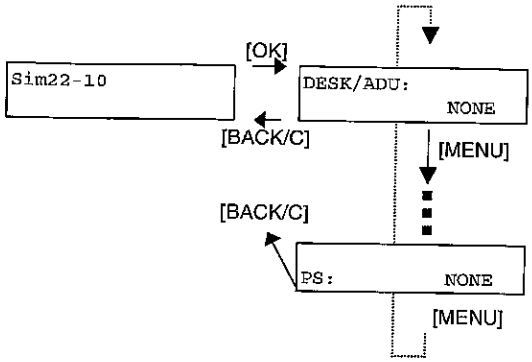
22 -10

Purpose	Adjustment/Setting/Operation data output, check (display, print)
Function (Purpose)	Used to check the system configuration (option, internal hardware).
Item	Specifications Option
Operation/ Procedure	Select the display item with the [MENU] key.

This simulation allows to check the system configuration. The devices and the option units which are installed are displayed with the model names, etc.

Display	Content
DESK/ADU	Desk/Duplex unit
LCC	Large capacity cassette
INVERTER	Bypass module
FIN/SORTER	Rear process unit
PUNCHER	Punch unit
SDRAM	SDRAM capacity
PRINTER	Printer
PRINTER MEMORY	Printer memory
HDD	Hard disk capacity
NIC	NIC
FONT ROM	Kanji font
PS	Postscript

When installed: Each model name is displayed.
When not installed: "NONE" is displayed.

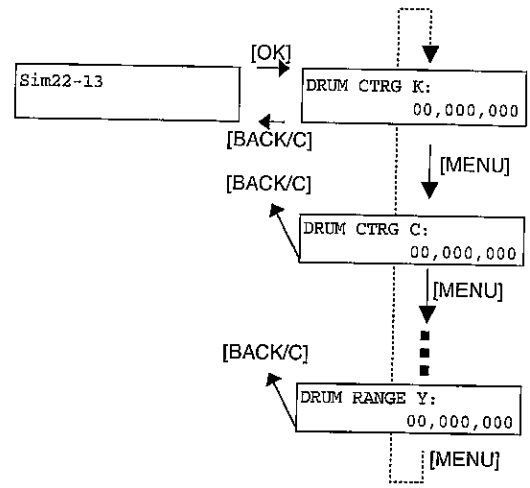


22 -13

Purpose	Adjustment/Setting/Operation data output, check (display, print)
Function (Purpose)	Used to check the cartridge counter.
Section	Process section
Item	Counter
Operation/ Procedure	Select the display counter with the [MENU] key.

(Counter values to be displayed)

Display	Content
DRUM CTRG K	Drum cartridge print counter (K)
DRUM CTRG C	Drum cartridge print counter (C)
DRUM CTRG M	Drum cartridge print counter (M)
DRUM CTRG Y	Drum cartridge print counter (Y)
DRUM RANGE K	Drum cartridge accumulated mileage (K)
DRUM RANGE C	Drum cartridge accumulated mileage (C)
DRUM RANGE M	Drum cartridge accumulated mileage (M)
DRUM RANGE Y	Drum cartridge accumulated mileage (Y)
TONER RANGE K	Toner cartridge accumulated mileage (K)
TONER RANGE C	Toner cartridge accumulated mileage (C)
TONER RANGE M	Toner cartridge accumulated mileage (M)
TONER RANGE Y	Toner cartridge accumulated mileage (Y)



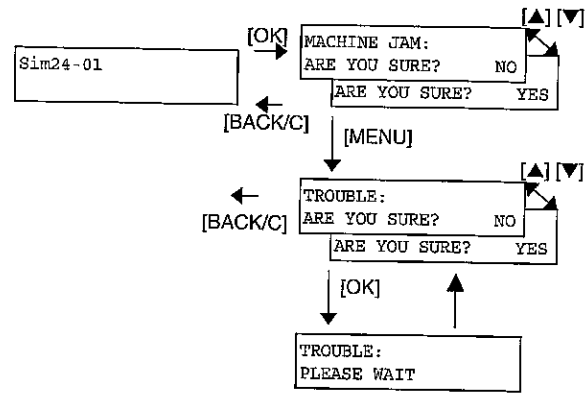
24

24 -1

Purpose	Data clear
Function (Purpose)	Used to clear the misfeed counter, the misfeed history, the trouble counter, and the trouble history.
Section	Memory
Item	Counter
Operation/ Procedure	1. Select the counter to be cleared with the [MENU] key. 2. Select counter clear or not with [▲] [▼] keys. YES: Clear NO: Not clear 3. When the [OK] key is pressed with YES selected, the DATA LED flashes to clear the data. 4. During the process, the display shows the message of "PLEASE WAIT." When the process is completed, the display shows "No." * During the process, all the keys are invalid.

After completion of maintenance, the counters are cleared.
(Counter to be cleared)

Display	Content
MACHINE JAM	Machine JAM counter
TROUBLE	Trouble counter



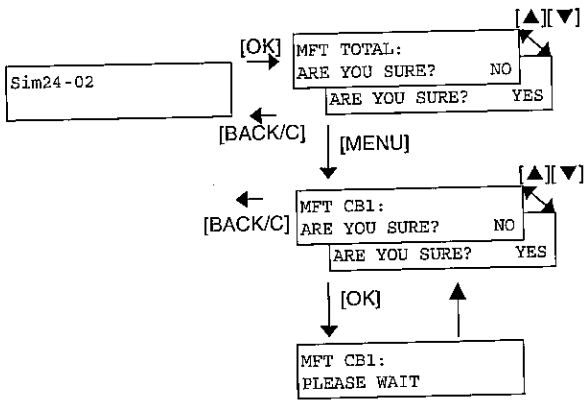
24 -2

Purpose	Data clear
Function (Purpose)	Used to clear the data of the number of uses (print quantity) of each paper feed section.
Section	Paper feed
Item	Counter Paper feed unit
Operation/ Procedure	1. Select the counter to be cleared with the [MENU] key. 2. Select counter clear or not with [▲] [▼] keys. YES: Clear NO: Not clear 3. When the [OK] key is pressed with YES selected, the DATA LED flashes to clear the data. 4. During the process, the display shows the message of "PLEASE WAIT." When the process is completed, the display shows "No." * During the process, all the keys are invalid.

After completion of maintenance, the following counters are cleared.

(Counters to be cleared)

MFT TOTAL	Manual paper feed (total) counter
MFT HEAVY P1	Manual paper feed (heavy paper 1) counter
MFT HEAVY P2	Manual paper feed (heavy paper 2) counter
MFT OHP1	Manual paper feed (OHP1) counter
MFT OHP2	Manual paper feed (OHP2) counter
MFT ENV	Manual paper feed (Envelope) counter
TRAY1	Tray 1 counter
TRAY2	Tray 2 counter
TRAY3	Tray 3 counter
TRAY4	Tray 4 counter
ADU	Duplex unit counter
LCC	Large capacity tray counter

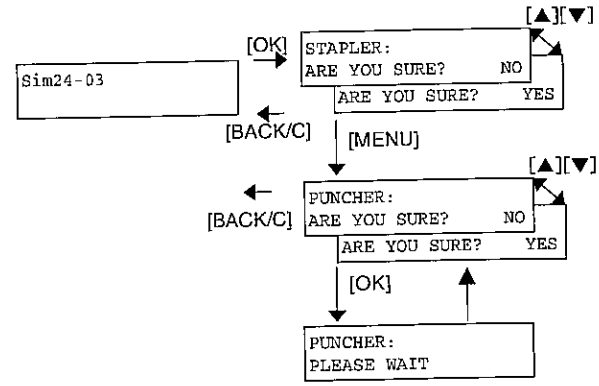


24 -3

Purpose	Data clear
Function (Purpose)	Used to clear the use number data of the staple, the puncher and the inverter.
Section	Transport/Finisher
Item	Counter
Operation/ Procedure	1. Select the counter to be cleared with the [MENU] key. 2. Select counter clear or not with [▲] [▼] keys. YES: Clear NO: Not clear 3. When the [OK] key is pressed with YES selected, the DATA LED flashes to clear the data. 4. During the process, the display shows the message of "PLEASE WAIT." When the process is completed, the display shows "No." * During the process, all the keys are invalid.

(Counters to be cleared)

Display	Content
STAPLER	Staple counter
PUNCHER	Puncher counter
INVERTER	Inverter counter

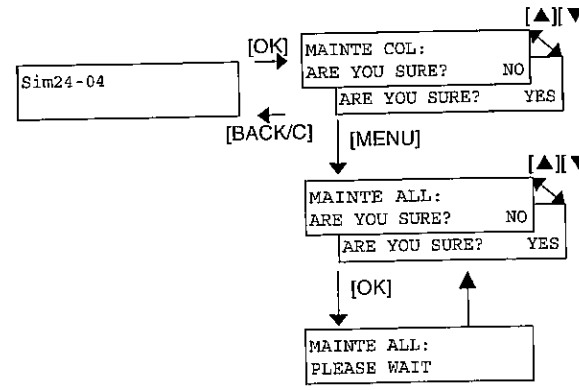


24 -4

Purpose	Data clear
Function (Purpose)	Used to reset the maintenance counter.
Item	Counter Maintenance
Operation/ Procedure	1. Select the counter to be cleared with the [MENU] key. 2. Select counter clear or not with [▲] [▼] keys. YES: Clear NO: Not clear 3. When the [OK] key is pressed with YES selected, the DATA LED flashes to clear the data. 4. During the process, the display shows the message of "PLEASE WAIT." When the process is completed, the display shows "No." * During the process, all the keys are invalid.

(Counters to be cleared)

MAINTE COL	Maintenance counter (Color)
MAINTE ALL	Maintenance counter (Total)
BELT UNIT	Transfer unit print counter/Accumulated mileage of transfer unit
FUSER UNIT	Fusing unit print counter/Accumulated time of fusing unit temperature control

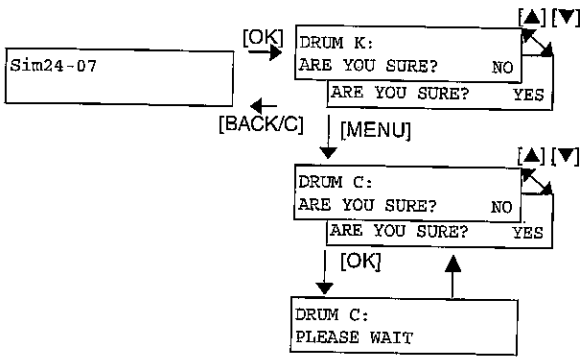


24 -7

Purpose	Data clear
Function (Purpose)	The OPC drum/toner cartridge counter is cleared.
Section	Process (Photoconductor, developing, transfer, cleaning) Photoconductor
Item	Counter Photoconductor
Operation/ Procedure	1. Select the counter to be cleared with the [MENU] key. 2. Select counter clear or not with [▲] [▼] keys. YES: Clear NO: Not clear 3. When the [OK] key is pressed with YES selected, the DATA LED flashes to clear the data. 4. During the process, the display shows the message of "PLEASE WAIT." When the process is completed, the display shows "No." * During the process, all the keys are invalid.

After replacement of the OPC drum, the following counters are cleared.
(Counters to be cleared)

Display	Content	
DRUM K	Drum cartridge print counter/Accumulated mileage of drum cartridge	K
DRUM C	Drum cartridge print counter/Accumulated mileage of drum cartridge	C
DRUM M	Drum cartridge print counter/Accumulated mileage of drum cartridge	M
DRUM Y	Drum cartridge print counter/Accumulated mileage of drum cartridge	Y



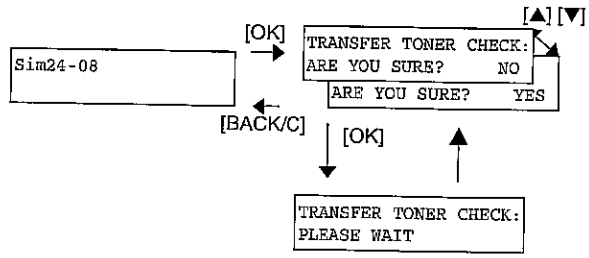
24 -8

Purpose	Data clear
Function (Purpose)	Used to clear the waste toner full detection counter in the transfer section.
Section	Process (Photoconductor, developing, transfer, cleaning) Transfer
Item	Counter
Operation/ Procedure	In order to execute this simulation, the following conditions must be satisfied. Be sure to check them in advance. * The transfer unit is installed to the machine. * All the cabinet open/close detection switches are ON.

1. Select counter clear or not with [▲] [▼] keys.
   YES: Clear
   NO: Not clear
2. When the [OK] key is pressed with YES selected, the DATA LED flashes to clear the data.
3. During the process, the display shows the message of "PLEASE WAIT." When the process is completed, the display shows "No."

* During the process, all the keys are invalid.

After removing waste toner from the transfer section, the counter is cleared.

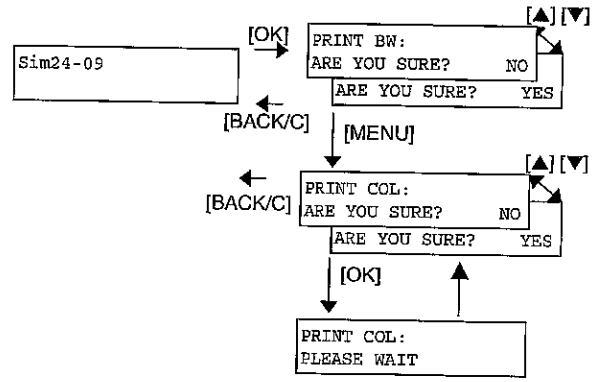


24 -9

Purpose	Data clear
Function (Purpose)	Used to clear the printer mode counter and the self-print mode print counter.
Section	Printer
Item	Counter Printer
Operation/ Procedure	1. Select the counter to be cleared with the [MENU] key. 2. Select counter clear or not with [▲] [▼] keys. YES: Clear NO: Not clear 3. When the [OK] key is pressed with YES selected, the DATA LED flashes to clear the data. 4. During the process, the display shows the message of "PLEASE WAIT." When the process is completed, the display shows "No." * During the process, all the keys are invalid.

After completion of maintenance, the following counter is cleared.
(Clear target counter)

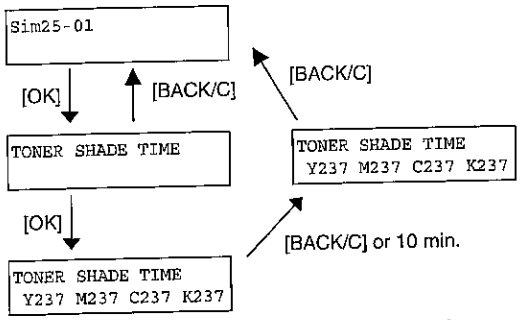
PRINT BW	Printer mode print counter (B/W)
PRINT COL	Printer mode print counter (Color)
OTHER BW	Self print mode print counter (B/W)
OTHER COL	Self print mode print counter (Color)



25

25 -1

Purpose	Operation test/check
Function (Purpose)	Used to check the drum operation and the toner remaining quantity sensor operation. (The toner remaining quantity sensor output can be monitored.)
Section	Process (Photoconductor, developing, transfer, cleaning)
Item	Operation
Operation/ Procedure	1. When the [OK] key is pressed, all the drum motors are driven (117mm/s) and the light shading time (unit: ms) by each color toner stirring spring is displayed. During driving, the DAYA LED flashes. 2. After 10min, drive is stopped and DATA LED turns off. 3. To interrupt the drum operation, press the [BACK/C] key.



* When the shade time exceeds 999, "***" is displayed.

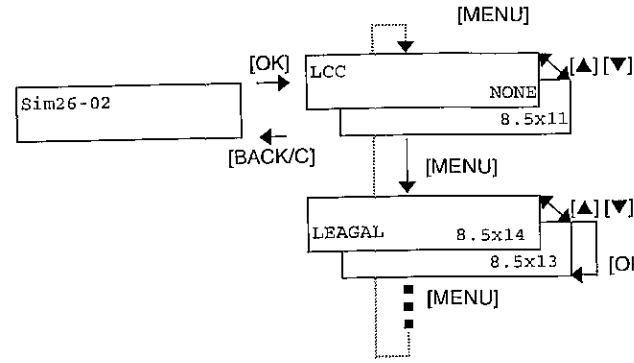
26

26 -2

Purpose	Setting
Function (Purpose)	Used to set the paper size of the large capacity tray. (When the paper size is changed, the software setup must be changed accordingly with this simulation.)
Section	Paper feed
Item	Specifications
Operation/ Procedure	1. Select the set item with the [MENU] key. 2. Select the set value with [▲] [▼] keys and press the [OK] key to set.

(Selection item)

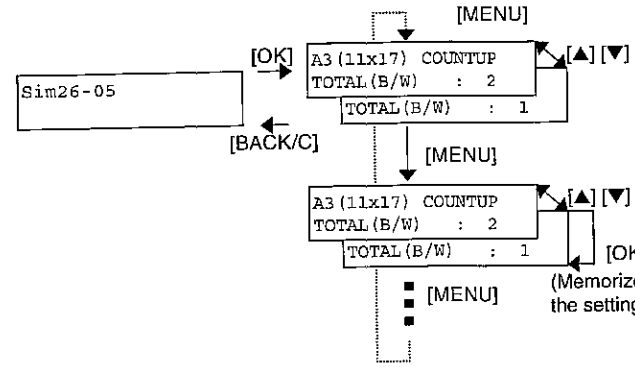
Item	Set value	Content
LCC	0	No size specified
	1	8.5 x 11
	2	A4
LEGAL (INCH)	0	8.5 x 14
	1	8.5 x 13
MFT TYPE	0	Unit: gram
	1	Unit: pound



26 -5

Purpose	Setting
Function (Purpose)	Used to set the count mode of the total counter and the maintenance counter. When a copy is made on A3, 3 x 17, A3 wide, 12 x 18 size, the count-up amount (1 or 2) of the total counter and the maintenance counter cam be set. The set items are as follows:
Item	Specifications Counter
Operation/ Procedure	1. Select the set item with the [MENU] key. 2. Select "1" (single) or "2" (double) with [▲] [▼] keys and press the [OK] key to set.

Item	Content	Set range	Default
TOTAL(B/W)	Total counter (B/W)	1 – 2	2
TOTAL(COL)	Total counter (Color)	1 – 2	2
MAINTE(B/W)	Maintenance counter (B/W)	1 – 2	2
MAINTE(COL)	Maintenance counter (Color)	1 – 2	2



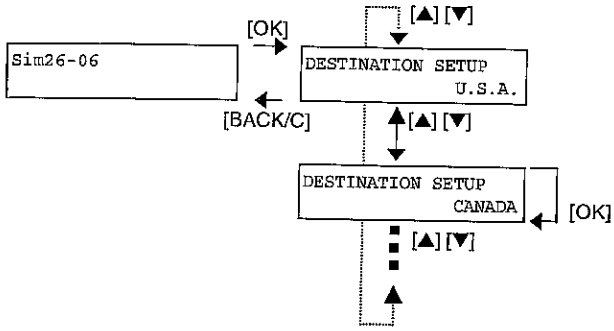
26 -6

Purpose	Setting
Function (Purpose)	Used to set the destination specifications (paper, fixed copy magnification ratios, image (process) correction, machine operation in case of an error, etc.).
Item	Specifications Destination
Operation/ Procedure	Select the destination with [▲] [▼] keys and press the [OK] key to set.

(Destinations to be selected)

Destination	
U.S.A.	United States of America
CANADA	Canada
INCH	Inch series, other destinations
JAPAN	Japan
AB_B	AB series (B5 detection), other destinations
EUROPE	Europe
U.K.	United Kingdom
AUS.	Australia
AB_A	AB series (A5 detection), other destinations

Destination	
CHINA	China



SIM No.	Content	U.S.A	Canada	Inch	Japan	AB_B
SIM26-02	Manual feed paper kind display	1 (LBS)	1 (LBS)	1 (LBS)	0 (GRAM)	0 (GRAM)
SIM26-02	Legal set value	0 (8.5x14)	0 (8.5x14)	0 (8.5x14)	0 (8.5x14)	0 (8.5x14)
SIM26-52	White paper exit count-up setting	1 (Counts up.)	1 (Counts up.)	1 (Counts up.)	0 (No counts)	1 (Counts up.)
SIM26-69	Toner near end setting	0 (CONTINUE)	0 (CONTINUE)	0 (CONTINUE)	0 (CONTINUE)	0 (CONTINUE)
SIM43-01A	Normal paper HL1 control temperature	175	175	175	170	170
SIM43-01B	Normal paper HL2 control temperature	140	140	140	140	140
SIM43-01C	HL1 control temperature in the ready state	170	170	170	165	165
SIM43-01E	Heavy paper 1 HL1 control temperature	175	175	175	170	170
SIM43-01F	Heavy paper 1 HL2 control temperature	136	136	136	135	135
SIM43-01Q	Fusing motor rotation start temperature in warming up	155	155	155	155	155
SIM21-1	Transfer unit maintenance cycle	100K	100K	100K	50K	100K
SIM21-1	Fusing unit maintenance cycle	100K	100K	100K	50K	100K
Key operation	Language setting	0 x 50	0 x 50	0 x 5c	0 x 51	0 x 5c
Key operation	Tray 1 size setting	1 (8.5 x 11)	1 (8.5 x 11)	1 (8.5 x 11)	2 (A4)	2 (A4)
Key operation	Tray 2 size setting	1 (8.5 x 11)	1 (8.5 x 11)	1 (8.5 x 11)	2 (A4)	2 (A4)
Key operation	Tray 3 size setting	1 (8.5 x 11)	1 (8.5 x 11)	1 (8.5 x 11)	2 (A4)	2 (A4)
Key operation	Tray 4 size setting	1 (8.5 x 11)	1 (8.5 x 11)	1 (8.5 x 11)	2 (A4)	2 (A4)
Key operation	LCC size setting	1 (8.5 x 11)	1 (8.5 x 11)	1 (8.5 x 11)	2 (A4)	2 (A4)
Key operation	Manual feed size setting	1 (8.5 x 11)	1 (8.5 x 11)	1 (8.5 x 11)	2 (A4)	2 (A4)
Key operation	Auto summer time setting	0 (Disable)	0 (Disable)	0 (Disable)	0 (Disable)	0 (Disable)
Key operation	Tray 1 special size	0 x 05 (WLT)	0 x 05 (WLT)	0 x 05 (WLT)	0 x 45 (A3)	0 x 45 (A3)
Key operation	Tray 2 special size	0 x 05 (WLT)	0 x 05 (WLT)	0 x 05 (WLT)	0 x 45 (A3)	0 x 45 (A3)
Key operation	Tray 3 special size	0 x 05 (WLT)	0 x 05 (WLT)	0 x 05 (WLT)	0 x 45 (A3)	0 x 45 (A3)
Key operation	Tray 4 special size	0 x 05 (WLT)	0 x 05 (WLT)	0 x 05 (WLT)	0 x 45 (A3)	0 x 45 (A3)
Key operation	A4 letter automatic switch	0 (OFF)	0 (OFF)	0 (OFF)	0 (OFF)	0 (OFF)
PRT environment setting	SPDL symbol set	1 (Roman8)	1 (Roman8)	1 (Roman8)	36 (Win3.1J)	1 (Roman8)
PRT environment setting	SPDL font	0 (Font No. 0)	0 (Font No. 0)	0 (Font No. 0)	81 (Font No. 81)	0 (Font No. 0)

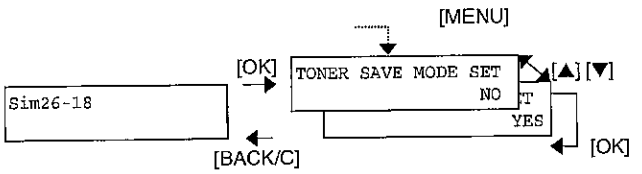
SIM No.	Content	Europe	U.K.	Aus.	AB_A	China
SIM26-02	Manual feed paper kind display	0 (GRAM)	0 (GRAM)	0 (GRAM)	0 (GRAM)	0 (GRAM)
SIM26-02	Legal set value	0 (8.5 x 14)	0 (8.5 x 14)	1 (8.5 x 13)	0 (8.5 x 14)	0 (8.5 x 14)
SIM26-52	B/W paper exit count-up setting	1 (Counts up.)	1 (Counts up.)	0 (No counts)	1 (Counts up.)	1 (Counts up.)
SIM26-69	Toner near end setting	0 (CONTINUE)	1 (STOP)	0 (CONTINUE)	0 (CONTINUE)	0 (CONTINUE)
SIM46-33A	Filter setting of color automatic document recognition	2 (EX Japan)	2 (EX Japan)	2 (EX Japan)	2 (EX Japan)	2 (EX Japan)
SIM43-01A	Normal paper HL1 control temperature	175	175	175	175	170
SIM43-01B	Normal paper HL2 control temperature	140	140	140	140	140
SIM43-01C	HL1 control temperature in the ready state	170	170	170	170	165
SIM43-01E	Heavy paper 1 HL1 control temperature	175	175	175	175	170

SIM No.	Content	Europe	U.K.	Aus.	AB_A	China
SIM43-01F	Heavy paper 1 HL2 control temperature	136	136	136	136	135
SIM43-01Q	Fusing motor rotation start temperature in warming up	155	155	155	155	155
SIM21-1	Transfer unit maintenance cycle	100K	100K	100K	100K	100K
SIM21-1	Fusing unit maintenance cycle	100K	100K	100K	100K	100K
Key operation	Language setting	0 x 5c	0 x 5c	0 x 5c	0 x 5c	0 x 5b
Key operation	Tray 1 size setting	2 (A4)	2 (A4)	2 (A4)	2 (A4)	2 (A4)
Key operation	Tray 2 size setting	2 (A4)	2 (A4)	2 (A4)	2 (A4)	2 (A4)
Key operation	Tray 3 size setting	2 (A4)	2 (A4)	2 (A4)	2 (A4)	2 (A4)
Key operation	Tray 4 size setting	2 (A4)	2 (A4)	2 (A4)	2 (A4)	2 (A4)
Key operation	LCC size detection	2 (A4)	2 (A4)	2 (A4)	2 (A4)	2 (A4)
Key operation	Manual fee size setting	2 (A4)	2 (A4)	2 (A4)	2 (A4)	2 (A4)
Key operation	Auto summer time setting	1 (Enable)	0 (Disable)	1 (Enable)	0 (Disable)	0 (Disable)
Key operation	Tray 1 special size	0 x 45(A3)	0 x 45(A3)	0 x 45(A3)	0 x 45(A3)	0 x 45 (A3)
Key operation	Tray 2 special size	0 x 45(A3)	0 x 45(A3)	0 x 45(A3)	0 x 45(A3)	0 x 45 (A3)
Key operation	Tray 3 special size	0 x 45(A3)	0 x 45(A3)	0 x 45(A3)	0 x 45(A3)	0 x 45 (A3)
Key operation	Tray 4 special size	0 x 45(A3)	0 x 45(A3)	0 x 45(A3)	0 x 45(A3)	0 x 45 (A3)
Key operation	A4 letter automatic switch	1 (ON)	1 (ON)	0 (OFF)	0 (OFF)	0 (OFF)
PRT environment setting	SPDL symbol set	1(Roman8)	1(Roman8)	1(Roman8)	1(Roman8)	1(Roman8)
PRT environment setting	SPDL font	0 (Font No. 0)	0 (Font No. 0)	0 (Font No. 0)	0 (Font No. 0)	0 (Font No. 0)

Language setting: 0 x 50 (American English, 0 x 51 (Japanese), 0 x 5b (Chinese), 0 x 5c (English)

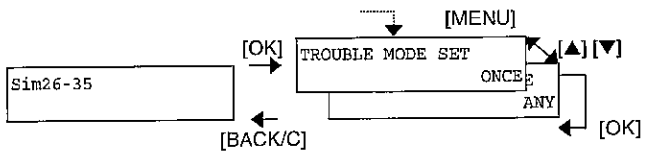
26 -18

Purpose	Setting
Function (Purpose)	Used to set YES/NO of toner save operation. (This simulation is Enable only for Japan and UK versions. It depends on SIM 26-6 (Destination) setting. For the other destinations, the same setting can be made by the user program P22. (Effective only in the monochrome copy mode)
Item	Specifications Operation mode (Common)
Operation/ Procedure	Select the mode with [▲] [▼] keys and press the [OK] key to set. NO: Toner save mode is not set. (Default) YES: Toner save mode is set. * Displayed only when the destination is Japan or U.K.



26 -35

Purpose	Setting
Function (Purpose)	Used to set whether the trouble history display by SIM 22-4 is displayed as one trouble or as the accumulated number of continuous troubles when two or more troubles of same kind occur continuously.
Item	Specifications
Operation/ Procedure	Set YES/NO of the display with [▲] [▼] keys and press the [OK] key to set. • ONCE: Displayed as one trouble. (Default) • ANY: The number of times of occurrence is directly displayed.



26 -38

Purpose	Setting
Function (Purpose)	Used to set "Continue/Stop" of printing when the maintenance timing (replacement timing of each consumable part) is reached.
Item	Specifications
Operation/ Procedure	Set the operating conditions with [▲] [▼] keys and press the [OK] key to set. • CONTINUE: Printing is continued. (Default) • STOP: Printing is stopped.

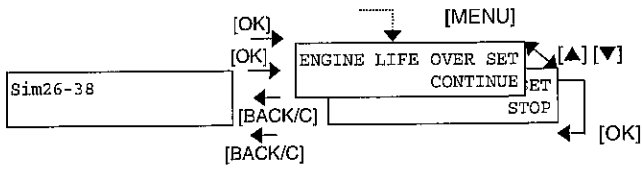
[Target item]

* Maintenance preset counter (Depending on the set value of SIM21-1.)
* Consumable part replacement timing

Transfer belt (Depending on the set value of SIM21-1.)

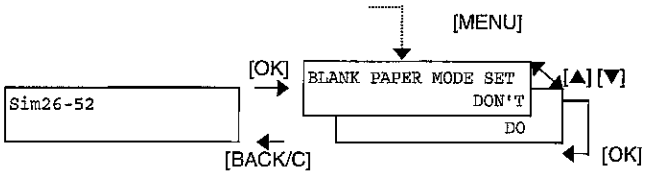
Fusing unit (Depending on the set value of SIM21-1.)

OPC drum



26 -52

Purpose	Setting
Function (Purpose)	Used to set YES/NO of count up of non-copy paper (cover or insertion paper).
Item	Specifications — Operation mode
Operation/ Procedure	Set the operating conditions with [▲] [▼] keys and press the [OK] key to set. • DON'T: Non-print is not counted. (Default: Japan/ Australia) • DO: Non-print is counted. (Default: Other countries)



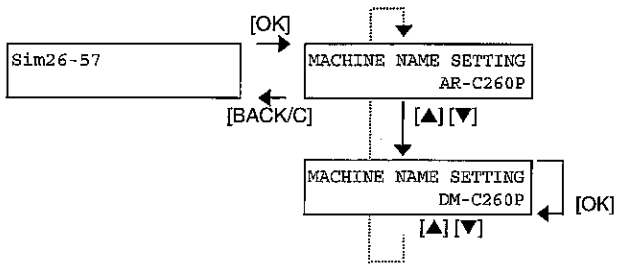
26 -57

Purpose	Setting
Function (Purpose)	Used to set the model name for use as the status information. Can be set only for the destination of Japan.
Item	Specifications
Operation/ Procedure	Select the model name with [▲] [▼] keys and press the [OK] key to set. (The model name information set in this simulation is used in the RIC/MIB system).

(For Japan)

Display model name	Content
AR-C260P	AR printer model
DM-C260P	DM printer model

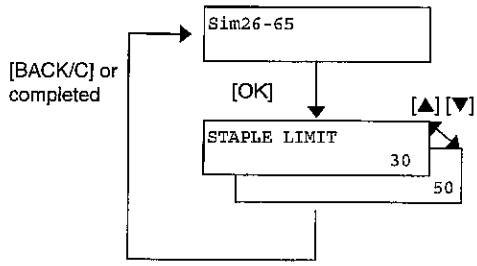
* This setting is available only when the destination is Japan.



26 -65

Purpose	Setting
Function (Purpose)	Used to set the finisher alarm mode.
Item	Specifications
Operation/ Procedure	Select the staple limit quantity (30 sheets/50 sheets) with [▲] [▼] keys and press the [OK] key to set.

Item	Content	Set value		Default
STAPLE LIMIT	Staple limit quantity	30	Staple limit quantity: 30	30
		50	Staple limit quantity: 50	



26 -69

Purpose	Setting
Function (Purpose)	The print conditions when toner near end are set. (When the toner cartridge is emptied.)
Item	Specifications
Operation/ Procedure	Select the setting mode with [▲] [▼] keys and press the [OK] key to set.

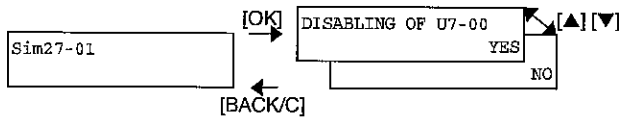
Item	Set value		Default
TONER NEAR END SET	CONTINUE	Printing is continued.	Other countries
	STOP	Printing is stopped.	UK

27

27 -1

Purpose	Operation test/check
Function (Purpose)	Used to set the specifications for operations in case of communication trouble between the host computer and MODEM (machine side). (When communication trouble occurs between the host computer MODEM and the machine, the self diag display (U7-00) is printed and setting for inhibition of print or not is made.)
Section	Communication (RIC/MODEM)
Item	Specifications — Operation mode (Common)
Operation/ Procedure	Select the detection condition with [▲] [▼] keys and press the [OK] key to set.

Set value	Set content
NO	U7-00 trouble detection is made.
YES	U7-00 trouble detection is not made. (Default)

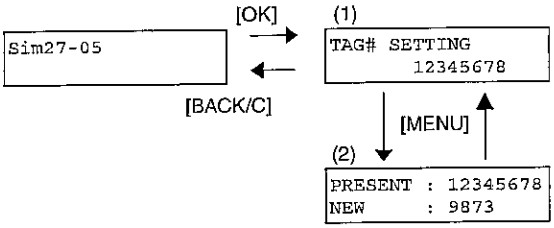


27 -5

Purpose	Setting
Function (Purpose)	Used to enter the machine tag No. (This function allows to check the tag No. of the machine with the host computer.)
Section	Communication (RIC/MODEM)
Item	Data — User data
Operation/ Procedure	1. Press the [MENU] key on TAG# SETTIGN menu (1) to switch the display to the new tag number entry menu (2). 2. A new tag number is entered in the column of "NEW" by the following operation. • [▲] [▼] keys: Used to increase or decrease a value. • [BACK/C] key: Shifts the input digit (flashing).

3. The input number is revised by one of the following procedures.
   - Press the [OK] key when the eighth digits flashes.
   - Press the [MENU] key with one or more digit entered.

In either case, the number is revised and the display returns to menu (1).
It is advisable to enter the machine's serial No. for machine management and servicing.



Note: To perform this setting, the host computer and the machine must be connected through MODEM.

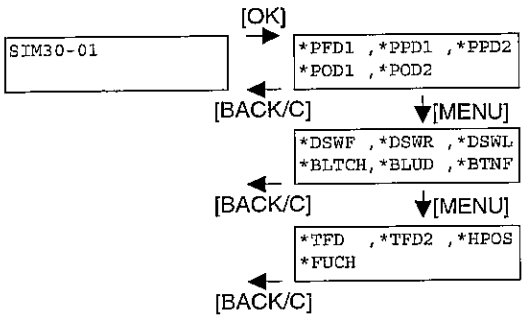
30

30 -1

Purpose	Operation test/check
Function (Purpose)	Used to check the operation of sensors and detectors in the paper feed, paper transport, paper exit sections and the related circuits.
Item	Operation
Operation/ Procedure	1. Select the sensor to be detected with the [MENU] key. 2. When the sensor is active, "*" is displayed in each section of the sensors on the display.

(Sensors to be checked)

Sensor name	Content
PFD1	Paper feed detection 1 (Tray 1)
PPD1	Transport detection 1
PPD2	Transport detection 2
POD1	Paper exit detection 1
POD2	Paper exit detection 2 (Top tray paper exit)
DSWF	Front door switch
DSWR	Right door switch
DSWL	Left door switch
BELTch	Belt unit installation detection
BLUD	Belt unit upper limit detection
BTNF	Belt waste toner full detection
TFD	Side tray paper full detection
TFD2	Top tray paper full detection
HPOS	Shifter home position detection
FUCH	Fusing installation detection

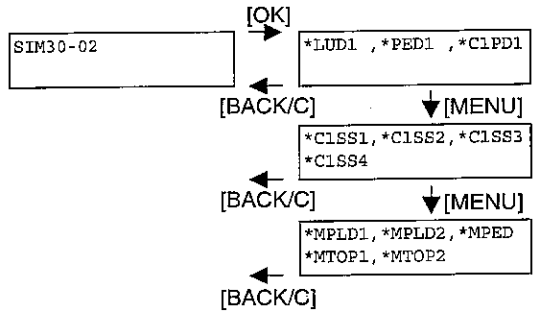


30 -2

Purpose	Operation test/check
Function (Purpose)	Used to check the operation of sensors and detectors in the paper feed section and the related circuits. (The operation of the paper feed sensors and detectors can be monitored with the LCD display.)
Section	Paper feed
Item	Operation
Operation/ Procedure	1. Select the sensor to be detected with the [MENU] key. 2. When the sensor is active, "*" is displayed in each section of the sensors on the display.

(Sensors to be checked)

Sensor name	Content
LUD1	Paper feed tray upper limit detection (Tray 1)
PED1	Paper feed tray paper empty detection (Tray 1)
C1PD1	Paper feed tray remaining paper quantity detection (Tray 1)
C1SS1	Paper feed tray size detection 1 (Tray 1)
C1SS2	Paper feed tray size detection 2 (Tray 1)
C1SS3	Paper feed tray size detection 3 (Tray 1)
C1SS4	Paper feed tray size detection 4 (Tray 1)
MPLD1	Manual feed size length detection 1
MPLD2	Manual feed size length detection 2
MPED	Manual feed tray paper empty detection
MTOP1	Manual feed tray pull-out detection 1
MTOP2	Manual feed tray pull-out detection 2



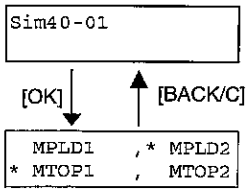
40

40 -1

Purpose	Operation test/check
Function (Purpose)	Used to check the operation of the manual feed tray paper size detector and the related circuit. (The operation of the manual feed tray paper size detector can be monitored with the LCD display.)
Section	Paper feed
Item	Operation
Operation/ Procedure	1. Select the sensor to be detected with the [MENU] key. 2. When the sensor is active, "*" is displayed in each section of the sensors on the display.

(Sensors subject to active check)

MPLD1	Manual feed size length detection 1
MPLD2	Manual feed size length detection 2
MTOP1	Manual feed tray pull-put detection 1
MTOP2	Manual feed tray pull-out detection 2



40 -2

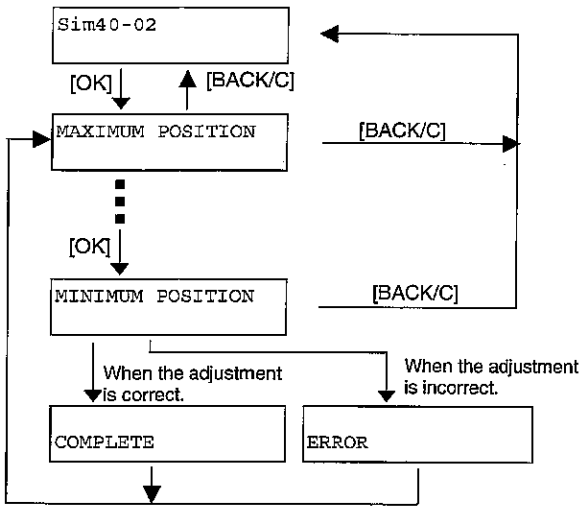
Purpose	Adjustment
Function (Purpose)	Check the max./min. AD value of the manual feed tray paper width to adjust the detection level.
Section	Paper feed
Item	Operation
Operation/ Procedure	The detection level is checked in the following procedure by the use of the machine manual feed tray.

1. Open the guide to the max. position and press the [OK] key.
2. Open the guide to P1 position and press the [OK] key.
3. Open the guide to P2 position and press the [OK] key.
4. Open the guide to the min. position and press the [OK] key.

If the detection level adjustment is normally completed, "COMPLETE" is displayed, If not, "ERROR" is displayed.

After completion of adjustment, the backup variable is written.

P1 position: A4 width
P2 position: A4R width



40 -7

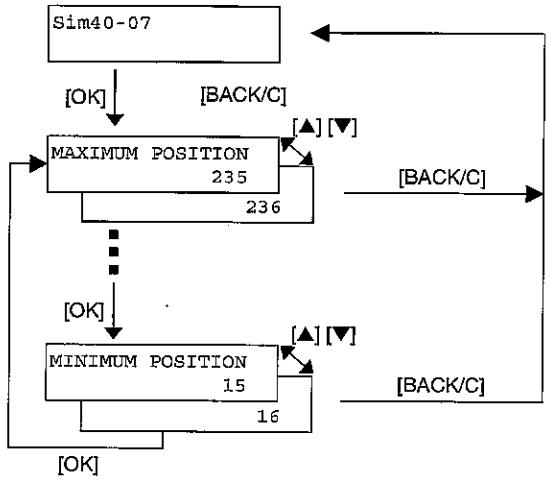
Purpose	Setting
Function (Purpose)	Check the max./min. AD value of the manual feed tray paper width to adjust the detection level. This simulation is not normally used. (Adjustment is made with SIM 40-02.)
Section	Paper feed
Item	Specifications
Operation/ Procedure	The detection level adjustment value at each position is set by the following procedure.

1. Select the position to set the adjustment value with the [OK] key.
2. Set the adjustment value with [▲] [▼] keys.

(Set range)

Position	Set range
MAXIMUM POSITION	0 – 255/P1 position set value or above
P1 POSITION	0 – 255/P2 position set value or above – Max. position set value or below
P2 POSITION	0 – 255/Min. position set value or above – P1 position set value or below
MINIMUM POSITION	0 – 255/P2 position set value or above

P1 position: A4 width
P2 position: A4R width



43

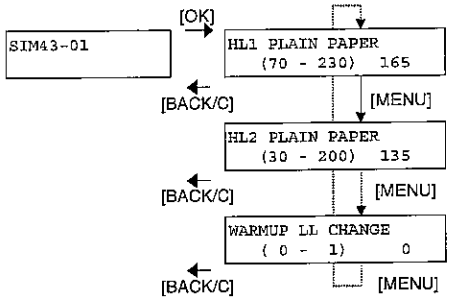
43 -1

Purpose	Setting
Function (Purpose)	Used to set the fusing temperature in each operation mode.
Section	Fixing (Fusing)
Item	Operation
Operation/ Procedure	1. Select the set item of fusing temperature with the [MENU] key. Each menu shows the set range (in the parenthesis) and the current set value. 2. To change the set value, set the value with [▲] [▼] keys and press the [OK] key to set.

(Display items)

Item	Display	Content	Set range	Default			
				100V Series	120V Series	200V Series	China
A	HL1 PLAIN PAPER	Normal paper HL1 set value	70 – 230	170	175	175	170
B	HL2 PLAIN PAPER	Normal paper HL2 set value	30 – 200	140	140	140	140
C	HL1 READY	HL1 set value in ready state	70 – 230	165	170	170	165
D	HL2 READY	HL2 set value in ready state	30 – 200	120	120	120	120
E	HL1 HEAVY PAPER1	Heavy paper 1 HL1 set value	70 – 230	170	175	175	170
F	HL2 HEAVY PAPER1	Heavy paper 1 HL2 set value	70 – 230	135	136	136	135
G	HL1 HEAVY PAPER2	Heavy paper 2 HL1 set value	70 – 230	175	175	175	175

Item	Display	Content	Set range	Default			
				100V Series	120V Series	200V Series	China
H	HL2 HEAVY PAPER2	Heavy paper 2 HL2 set value	70 – 230	145	145	145	145
I	HL1 OHP1	OHP1 HL1 set value	70 – 230	170	170	170	170
J	HL2 OHP1	OHP1 HL2 set value	70 – 230	155	155	155	155
K	HL1 OHP2	OHP2 HL1 set value	70 – 230	170	170	170	170
L	HL2 OHP2	OHP2 HL2 set value	70 – 230	155	155	155	155
M	HL1 ENVELOPE	Envelope HL1 set value	70 – 230	180	180	180	180
N	HL2 ENVELOPE	Envelope HL2 set value	70 – 230	145	145	145	145
O	E-STAR	Temperature set value in pre-heating	70 – 200	143	143	143	143
P	PRE-BK	(In black and white copy) pre-heat reset temperature	70 – 200	165	165	165	165
Q	WARMUP FUMON	Fusing motor previous rotation temperature set value	70 – 200	155	155	155	155
R	WARMUP LL CHANGE	Switch to the LL mode of fusing warm-up control	0 – 1	0	0	0	0



44

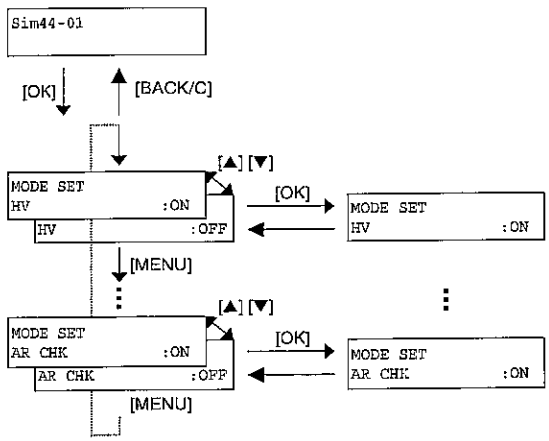
44 -1

Purpose	Setting
Function (Purpose)	Used to set enable/disable of correction operations in the image forming (process) section.
Section	Process (Photoconductor, developing, transfer, cleaning)
Item	Operation
Operation/ Procedure	1. Select the set item with the [MENU] key. 2. Select ON (valid)/OFF (invalid) of each function with [▲] [▼] keys. 3. When the [OK] key is pressed, DATA LED flashes and the set value is set.

(Items to be selected)

Item	Display	Content	Set range	Default
A	HV	Image forming section correction (Process correction) (High-density image density correction)	0 - 1	1
B	TC	Transfer output correction	0 - 1	1
C	RRM	RRM speed correction	0 - 1	1
D	MD	Photoconductor membrane decrease (sensitivity/potential) correction	0 - 1	1
E	AR	Image resist auto adjustment	0 - 1	1
F	AR CHK	Image resist auto adjustment error judgment	0 - 1	1

- After replacement of a toner cartridge
- At every 8000 copies (total of print)(When, however, 8000 copies is reached during a job, the operation is stopped after completion of the job.)



44 -2

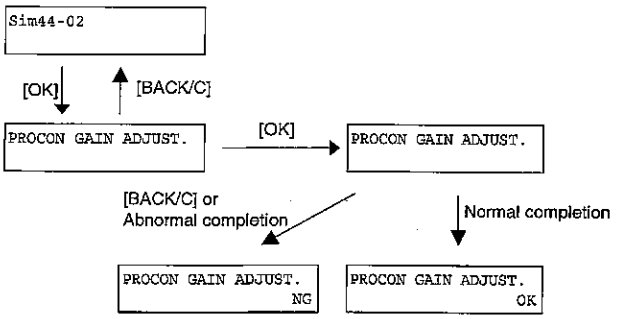
Purpose	Adjustment
Function (Purpose)	Black image density sensor adjustment and belt 1 surface reading
Section	Process (Transfer)
Item	Operation
Operation/ Procedure	1. When the [OK] key is pressed on the process control sensor adjustment menu (PROCON GAIN ADJUST), the DATA LED flashes to start the adjustment. The adjustment result is as shown below. • Normal OK • The above is NG. 2. When the [MENU] key is pressed with DATA LED turned OFF, the display item is changed and the set value of each item is displayed.

If the adjustment is not completed normally, "ERROR" is displayed.In case of an error, the contents of the adjustment are not revised.

(Display items)

Display		Content	Min Value	Max Value	Default value	Updating
A	PCS_C LED ADJ	Color image density sensor current adjustment value	1	255	51	Yes
B	PCS K LED ADJ	Black image density sensor LED current adjustment value	1	255	51	Yes
C	PCS_K GAIN	Black image density sensor output gain (AMP) adjustment value	0	15	0	Yes
D	PCS_K DARK	Black image density sensor dark voltage level	0	255	0	None

Display		Content	Min Value	Max Value	Default value	Updating
E	PCS_K GRND	Black image density sensor transfer belt surface detection level	0	255	0	None
F	BELTMAX	Transfer belt surface max. detection level (Black image sensor)	0	255	0	None
G	BELTMIN	Transfer belt surface min. detection level (Black image sensor)	0	255	0	None
H	BELTDIF	Difference between max. and min. of the transfer belt surface detection level (BELTmax-BELTMIN)	0	255	0	None

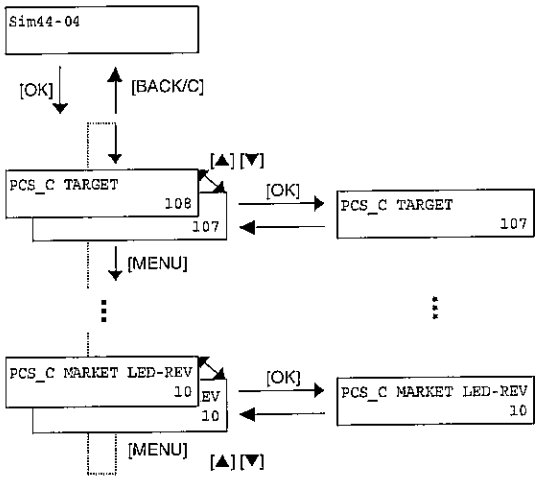


44 -4

Purpose	Setting
Function (Purpose)	Image forming section correction, image density sensor adjustment conditions setup
Section	Process (Photoconductor, development, transfer)
Item	Picture quality
Operation/ Procedure	1. Select the set item with the [MENU] key. 2. Change the set value with [▲] [▼] keys. 3. When the [OK] key is pressed, DATA LED lights up and the set value is set.

(Display items)

Display		Content	Min Value	Max Value	Default value
A	PCS_C TARGET	Color image density sensor adjustment target value	1	255	108
B	PCS_K TARGET	Black image density sensor adjustment target value	1	255	201
C	LED_C OUTPUT	Initial current level in color image density sensor adjustment	1	255	51
D	LED_K OUTPUT	Initial current level in black image density sensor adjustment	1	255	51
E	PCS ADJSTMENT LIMIT	Allowable error level in adjustments	1	255	2
F	BELT GROUND DIF	Error judgment level for the belt surface detection level difference	1	255	255
G	BIAS_CL STANDARD DIF	Set value (color) of the developing basis correction start voltage difference in high density image correction	0	255	50
H	BIAS_BK STANDARD DIF	Set value (black) of the developing basis correction start voltage difference in high density image correction	0	255	75
I	BIAS PATCH INTERVAL	Patch forming developing bias voltage interval (voltage difference) in high density image correction	1	255	50
J	Y_PAT TARGET ID	Base target density level (Y) in high density image correction	1	255	108
K	M_PAT TARGET ID	Base target density level (M) in high density image correction	1	255	125
L	C_PAT TARGET ID	Base target density level (C) in high density image correction	1	255	109
M	K_PAT TARGET ID	Base target density level (K) in high density image correction	1	255	22
N	HV BK_GROUND LIMIT	Error judgment level for belt surface detection level difference (Allowable range of transfer belt surface detection level difference (mix. - min.) of black toner image patch position)	1	255	29
O	PCS_C MARKET TARGET	Adjustment target value (Color image density sensor) when adjusting the primary LED current value by using the calibration plate in SIM44-36.	1	255	110
P	PCS_C MARKET LED-REV	In SIM44-36, the toner patch density is read by three kinds of LED currents with the primary LED current adjustment value as the center value in order to obtain PCS C LED ADJ value. This is the deflection range of the current value in the above case. (Color image density sensor)	1	255	10



44 -6

Purpose	Operation test/check
Function (Purpose)	Used to forcibly execute the image forming section correction (high density process correction).
Section	Process (Photoconductor, developing, transfer, cleaning)
Item	Operation
Operation/ Procedure	1. When the [OK] key is pressed, DATA LED flashes and the high density process correction is forcibly executed.

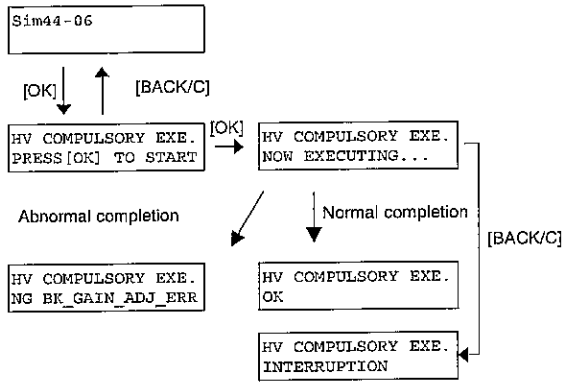
2. After completion of process correction, the DATA LED turns off and the correction result is displayed.
   - Normal completion: "OK"
   - Abnormal completion: NG + details of error

The detail of correction can be checked with SIM 44-9 and SIM 44-12.

(Result/Detail messages list)

Result display	Content
OK	Correction is normally completed.
NG	An error occurred during correction. (The previous correction result is maintained.)
INTERRUPTION	Compulsory interruption

Error display	Content
CL_SEN_ADJ_ERR	Color image density sensor adjustment error
BK_GAIN_ADJ_ERR	Black image density sensor gain adjustment error
BK_SEN_ADJ_ERR	Black image density sensor adjustment error
K_HV_ERR	High-density image density correction (process correction) error (K)
C_HV_ERR	High-density image density correction (process correction) error (C)
M_HV_ERR	High-density image density correction (process correction) error (M)
Y_HV_ERR	High-density image density correction (process correction) error (Y)
CONNECTION_ERR	Sensor-PCU PWB communication trouble



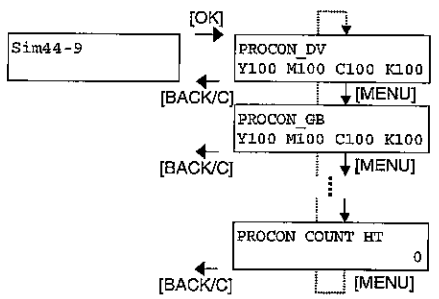
44 -9

Purpose	Adjustment/Setting/Operation data output, check (display, print)
Function (Purpose)	Used to check the data related to the image forming section correction (the corrected main charger grid voltage in each print mode, the developing bias voltage, etc.). (Used to check that correction is performed normally or not.)
Section	Process (Photoconductor, developing, transfer, cleaning)
Item	Data Operation data (Machine conditions)
Operation/ Procedure	Select the display item with the [MENU] key. Check the correction result of the image forming section and various data of life information.

(Displayed items)

Item	Display item	Content	Set range	Default
A	PROCON_DV	High density procon DV data (YMCK)	0 – 450	0
B	PROCON_GB	High density procon GB data (YMCK)	0 – 700	0
C	NORMAL_DV (MI)	High density normal DV data (YMCK)	0 – 450	325
D	NORMAL_GB (MI)	High density normal GB data (YMCK)	0 – 700	545
E	NORMAL_DV (LO)	High density normal DV data (YMCK)	0 – 450	325
F	NORMAL_GB (LO)	High density normal GB data (YMCK)	0 – 700	545
G	NORMAL_DV (HI)	High density normal DV data (K)	0 – 450	325
H	NORMAL_GB (HI)	High density normal GB data (K)	0 – 700	545
I	TONER SAVE_DV (MI)	High density toner save DV data (K)	0 – 450	325
J	TONER SAVE_GB (MI)	High density toner save GB data (K)	0 – 700	545
K	TONER SAVE_DV (LO)	High density toner save DV data (K)	0 – 450	325
L	TONER SAVE_GB (LO)	High density toner save GB data (K)	0 – 700	545
M	TONER SAVE_DV (HI)	High density toner save DV data (K)	0 – 450	325
N	TONER SAVE_GB (HI)	High density toner save GB data (K)	0 – 700	545
O	DRAWING_DV (MI)	High density drawing DV data (YMCK)	0 – 450	325
P	DRAWING_GB (MI)	High density drawing GB data (YMCK)	0 – 700	545
Q	DRAWING_DV (LO)	High density drawing DV data (YMCK)	0 – 450	325
R	DRAWING_GB (LO)	High density drawing GB data (YMCK)	0 – 700	545

Item	Display item	Content	Set range	Default
S	PROCESS AREA TMP/ HUD	Temperature $ humidity area display	1 – 9	4/4
T	PROCESS DATA TMP/ HUD	Temperature & humidity area AD value display	0 – 255	0/0
U	MD STEP	Drum membrane decrease correction STEP display (YMCK)	0 – 4	0
V	MD REVISE (MI)	Drum membrane decrease correction medium-speed display (YMCK)	0 – 255	0
W	MD REVISE (LO)	Drum membrane decrease correction low-speed display (YMCK)	0 – 255	0
X	MD REVISE (HI)	Drum membrane decrease correction high-speed display (YMCK)	0 – 255	0
Y	CONVERSION	Machine CONVERSION state	0 – 1	0
Z	DESTINATION	Machine side management CRUM destination	0x00 – 0xFF	0xFF
AA	MODEL TYPE	Machine model type	0 – 1	0
AB	CRUM DEST. (YMCK)	Destination of CRUM	0x00 – 0xFF	0xFF
AC	DV STEP	High voltage correction STEP display (YMCK)	0 – 3	0
AD	DV REVISE	High voltage correction display (YMCK)	0 – 255	0
AE	PROCON COUNT HV	Number of times of high density procon execution	0 – 99999999	0
AF	PROCON COUNT HT	Number of times of half tone process control	0 – 99999999	0

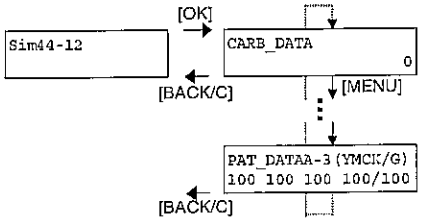


44 -12

Purpose	Adjustment/Setting/Operation data output, check (display, print)
Function (Purpose)	Used to check the sampling toner image patch density data in the image forming section correction (high-density correction) (process correction). This simulation allows to check if the correction operation is performed normally.)
Section	Process (Photoconductor, developing, transfer, cleaning)
Item	Data Operation data (Machine conditions)
Operation/ Procedure	Select the display item with the [MENU] key.

(Display items)

Item	Display	Content	Set range	Default
A	CARB_DATA	Calibration plate adjustment value	0 – 255	0
B	ID	Target ID (YMCK)	0 – 255	0
C	PAT_DATA 1-1 (YMCK/G)	High density procon patch reading data 1-1	0 – 255	0
D	PAT_DATA 1-2 (YMCK/G)	High density procon patch reading data 1-2	0 – 255	0
D	PAT_DATA 1-3 (YMCK/G)	High density procon patch reading data 1-3	0 – 255	0
F	PAT_DATA 2-1 (YMCK/G)	High density procon patch reading data 2-1	0 – 255	0
G	PAT_DATA 2-2 (YMCK/G)	High density procon patch reading data 2-2	0 – 255	0
H	PAT_DATA 2-3 (YMCK/G)	High density procon patch reading data 2-3	0 – 255	0
I	PAT_DATA 3-1 (YMCK/G)	High density procon patch reading data 3-1	0 – 255	0
J	PAT_DATA 3-2 (YMCK/G)	High density procon patch reading data 3-2	0 – 255	0
K	PAT_DATA 3-3 (YMCK/G)	High density procon patch reading data 3-3	0 – 255	0
L	PAT_DATA 4-1 (YMCK/G)	High density procon patch reading data 4-1	0 – 255	0
M	PAT_DATA 4-2 (YMCK/G)	High density procon patch reading data 4-2	0 – 255	0
N	PAT_DATA 4-3 (YMCK/G)	High density procon patch reading data 4-3	0 – 255	0
O	PAT_DATA 5-1 (YMCK/G)	High density procon patch reading data 5-1	0 – 255	0
P	PAT_DATA 5-2 (YMCK/G)	High density procon patch reading data 5-2	0 – 255	0
Q	PAT_DATA 5-3 (YMCK/G)	High density procon patch reading data 5-3	0 – 255	0
R	PAT_DATA 6-1 (YMCK/G)	High density procon patch reading data 6-1	0 – 255	0
S	PAT_DATA 6-2 (YMCK/G)	High density procon patch reading data 6-2	0 – 255	0
T	PAT_DATA 6-3 (YMCK/G)	High density procon patch reading data 6-3	0 – 255	0
U	PAT_DATA 7-1 (YMCK/G)	High density procon patch reading data 7-1	0 – 255	0
V	PAT_DATA 7-2 (YMCK/G)	High density procon patch reading data 7-2	0 – 255	0
W	PAT_DATA 7-3 (YMCK/G)	High density procon patch reading data 7-3	0 – 255	0
X	PAT_DATA 8-1 (YMCK/G)	High density procon patch reading data 8-1	0 – 255	0
Y	PAT_DATA 8-2 (YMCK/G)	High density procon patch reading data 8-2	0 – 255	0
Z	PAT_DATA 8-3 (YMCK/G)	High density procon patch reading data 8-3	0 – 255	0
AA	PAT_DATA 9-1 (YMCK/G)	High density procon patch reading data 9-1	0 – 255	0
AB	PAT_DATA 9-2 (YMCK/G)	High density procon patch reading data 9-2	0 – 255	0
AC	PAT_DATA 9-3 (YMCK/G)	High density procon patch reading data 9-3	0 – 255	0
AD	PAT_DATA A-1 (YMCK/G)	High density procon patch reading data 10-1	0 – 255	0
AE	PAT_DATA A-2 (YMCK/G)	High density procon patch reading data 10-2	0 – 255	0
AF	PAT_DATA A-3 (YMCK/G)	High density procon patch reading data 10-3	0 – 255	0



44 -13

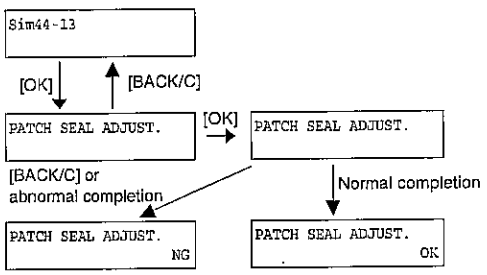
Purpose	Adjustment
Function (Purpose)	Color image density sensor adjustment (Adjustment by the adjustment jig)
Section	Process (Transfer)
Operation/ Procedure	1. Open the front cover of the machine. 2. Install the color image density sensor adjustment jig to the transfer unit frame, and close the left cabinet.

3. With the front cover of the machine open (cover open/close switch OFF), turn on the power.
4. Enter the SIM44-13 mode.
5. Close the front cover of the machine.
6. When the [OK] key is pressed on the patch seal adjustment menu (PATCH SEAL ADJUST), the DATA LED flashes to start the adjustment. The adjustment result is as shown below.
   - Normal completion OK
   - Abnormal completion: NG

   When the [MENU] key is pressed with DATA LED turned OFF, the display item is changed and the set value of each item is displayed.
7. After completion of adjustment, remove the color image density sensor adjustment jig.

(Set items)

Item	Display	Content	Min Value	Max Value	Default value	Updating
A	PCS_C CARB ADJ	Color image density sensor LED current adjustment target value	1	255	108	Yes
B	PCS_C DARK	Color image density sensor dark voltage level	0	255	0	None
C	PCS_C LED ADJ	Color image density sensor current adjustment value	1	255	51	Yes



44 -14

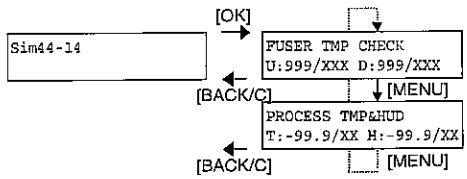
Purpose	Adjustment/Setting/Operation data output, check (display, print)
Function (Purpose)	Used to monitor the output level of the fusing temperature sensor, the machine temperature sensor, and the humidity sensor.
Section	Others
Operation/ Procedure	Select the display item with the [MENU] key.

(Display items)

Item	Display	Content	Set range	Default
A	FUSER TMP CHECK	Fusing temperature display Upper/Lower	0 – 255	0
B	PROCESS TMP&HUD	Image process correction temperature/humidity sensor display (Relative humidity/AD value)	*1	0

When the value exceeds the detection range, "--.-" is displayed.

*1: Developing temperature: –20.0 to 40.0
Humidity: 0.0 to 99.9



44 -36

Purpose	Adjustment
Function (Purpose)	Color image density sensor and black image density sensor adjustment (simple adjustment)
Section	Process (Transfer)
Operation/ Procedure	1. When the [OK] key is pressed on the image sensor adjustment menu for the market (MARKET SENSOR ADJ), the DATA LED flashes to start the adjustment. The adjustment result is displayed as follows: • Normal completion OK • Abnormal completion: NG

2. When the [MENU] key is pressed with DATA LED turned OFF, the display item is changed and the set value of each item is displayed.

(NOTE)

If the adjustment jig is not available, use the simple adjustment (SIM44-36). Depending on the machine conditions, however, the adjustment accuracy is insufficient. Carefully note that.

If toner, the OPC drum, and the transfer belt are not new ones or almost new ones, use of the simple adjustment method is not recommendable.

Though the machine conditions are so well as to use the simple adjustment (without the adjustment jig), it is better to perform the adjustment by using the adjustment jig for higher adjustment accuracy.

After the color image density sensor adjustment (adjustment by the adjusting jig) with SIM44-13, do not execute SIM44-36 unnecessarily.

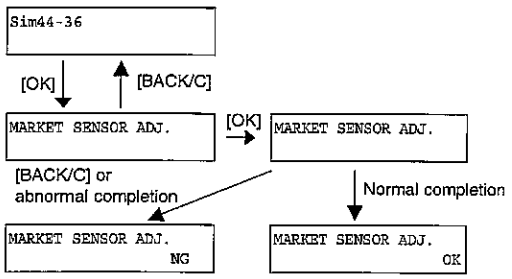
If SIM44-36 is executed, the contents of the color image density sensor adjustment (adjustment by the adjustment jig) are erased and the adjustment result of SIM44-36 are saved.

When the color image density sensor adjustment is executed with SIM44-13 and the black image density sensor adjustment is executed with SIM44-2, there is no need to execute the adjustment with SIM44-36.

To adjust the black image density sensor, the adjustment jig is not required.

(Adjustment items)

Item	Display	Content	Min Value	Max Value	Default value	Updating
A	PCS_C CARB ADJ	Color image density sensor LED current adjustment target value	1	255	108	Yes
B	PCS_C DARK	Color image density sensor dark voltage level	0	255	0	None
C	PCS_CLED ADJ	Color image density sensor current adjustment value	1	255	51	Yes
D	PCS K LED ADJ	Black image density sensor LED current adjustment value	1	255	51	Yes
E	PCS_K GAIN	Black image density sensor output gain (AMP) adjustment value	0	15	0	Yes
F	PCS_K DARK	Black image density sensor dark voltage level	0	255	0	None
G	PCS_K GRND	Black image density sensor transfer belt surface detection level	0	255	0	None
H	BELTMAX	Transfer belt surface max. detection level (Black image sensor)	0	255	0	None
I	BELTMIN	Transfer belt surface min. detection level (Black image sensor)	0	255	0	None
J	BELTDIF	Difference between the max. value and the min. value of transfer belt surface detection level (BELTMAX-BELTMIN)	0	255	0	None



48

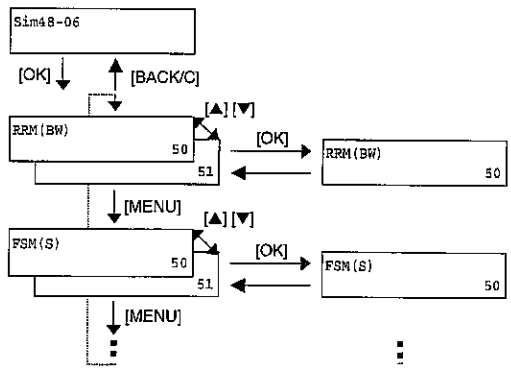
48 -6

Purpose	Adjustment
Function (Purpose)	Used to adjust each motor RPM.
Item	Operation
Operation/ Procedure	1. Select the set item with the [MENU] key. 2. Set the speed correction value of each motor with [▲] [▼] keys. 3. When the [OK] key is pressed, DATA LED flashes and the set value is set.

(Items to be set)

Item	Display	Content	Set range	Default
1	RRM (BW)	Resist motor/Black and white correction value	1 – 99	50
2	RRM (CL)	Resist motor/color correction value	1 – 99	50
3	BTM	Belt motor correction value	1 – 99	44
4	FSM (S)	Fusing motor correction value (small size pf paper)	1 – 99	80
5	DM (BW)	Drum motor/black and white correction value	1 – 99	60
6	DM (CL)	Drum motor/color correction value	1 – 99	60
7	PFM_CS (TRAY)	Paper feed motor correction value (Machine cassette paper feed)	1 – 99	55
8	PFM_MANUNAL	Paper feed motor correction value (Manual paper feed)	1 – 99	80
9	FSM (L)	Fusing motor correction value (large size of paper)	1 – 99	85
10	FSM (HEAVY PAPER)	Fusing motor correction value (When feeding heavy paper)	1 – 99	85
11	FSM (ENV)	Fusing motor correction value (when feeding postcards)	1 – 99	70
12	PFM_CS (DESK)	Paper feed motor correction value (DESK paper feed)	1 – 99	55
13	PFM_CS (ADU)	Paper feed motor correction value (ADU paper feed)	1 – 99	55
14	PFM_CS (LCC)	Paper feed motor correction value (LCC paper feed)	1 – 99	55

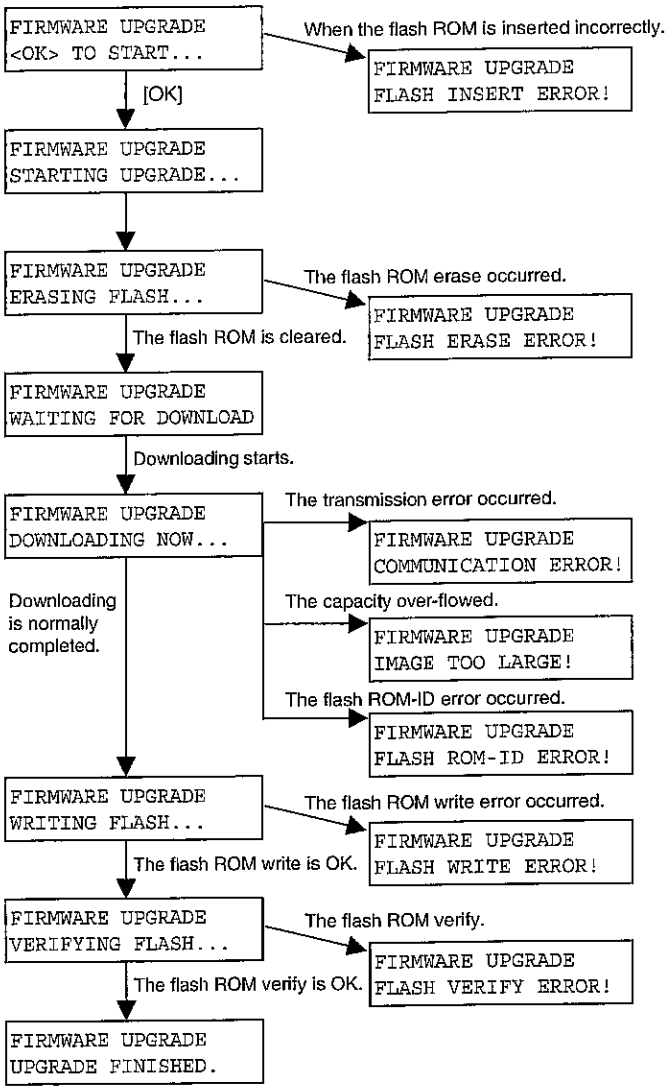
* FSM (L): A3W, A3, WLT, EXTRA, USER EXTRA (paper length of 420mm or more)



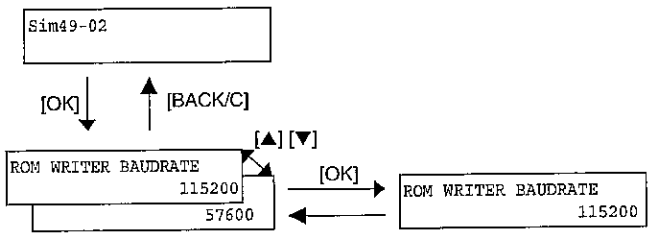
49

49 -1

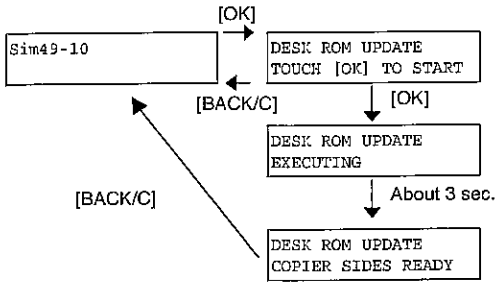
Purpose	Version up
Function (Purpose)	Used for firmware version up (Machine).
Section	Firmware (Machine)
Item	Operation
Operation/ Procedure	1. When the [OK] key is pressed on the upgrade screen (FIRMWARE UPGRADE), the Flash ROM is cleared and the machine goes into the standby state for downloading. 2. Downloading of the program is started on the PC side. 3. After completion of downloading, data are written into the Flash ROM.



49 -2	
Purpose	Version up
Function (Purpose)	Used to set the data communication speed in version up of the machine firmware.
Section	Firmware
Item	Operation
Operation/ Procedure	Select data communication speed with [▲] [▼] keys and press the [OK] key to set. (Communication speed: 9600, 19200, 38400, 57600, 115200 bps)



49 -10	
Purpose	Version up
Function (Purpose)	Used for firmware version up (Desk unit).
Section	Firmware (Desk unit)
Item	Operation
Operation/ Procedure	1. When the [OK] key is pressed on the update screen (DESK ROM UPDATE), the machine goes into the standby state for downloading. 2. Downloading of the program is started on the PC side. 3. After completion of downloading, data are written into the DESK ROM. * During updating, the DATA LED flashes.



50

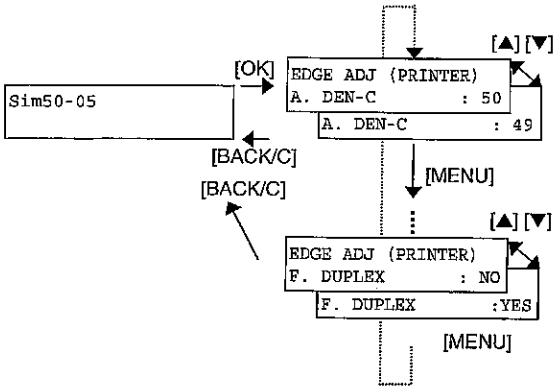
50 -5	
Purpose	Adjustment
Function (Purpose)	Used to adjust the image position and print area in the sub scanning direction. (Print engine section)
Section	ICU/Printer
Item	Picture quality
Operation/ Procedure	1. Select the adjustment item (DEN-B/DEN-C) with the [MENU] key, and adjust the point adjustment value with [▲] [▼] keys. 2. Set the print conditions (C–F) by the similar operations. 3. When the [OK] key is pressed, the test pattern corresponding to the set value is printed.

When test pattern print ready	READY LED ON
Test pattern printing disable	READY LED OFF
Test pattern printing	DATA LED flashing
JAM/When a trouble occurs.	ERROR LED flashing

(Descriptions on Set values)

	Display	Content	Set range	Default
A	DEN-C	Sub scanning print lead edge adjustment	1 – 99	40
B	DEN-B	Sub scanning print area adjustment	1 – 99	40
C	MULTI COUNT	Print quantity	1 – 99	1
D	PAPER	Paper feed tray selection	MFT/CS1/ CS2/CS3/ CS4/LCC	CS1
E	EXIT TRAY	Paper exit tray selection	R/S	R
F	DUPLEX	Duplex print selection	YES/NO	NO

* When the adjustment value of item A (DEN-C) is decreased by 1, the sub scanning print position is shifted to the lead edge by 0.1mm.
* When the adjustment value of item B (DEN-B) is decreased by 1; the rear edge void amount (image rear edge side) is decreased by 0.1 in the paper transport direction if the finisher is not installed, and the lead edge void amount (image rear edge side) is decreased by 0.1mm in the paper transport direction if the finisher is installed.



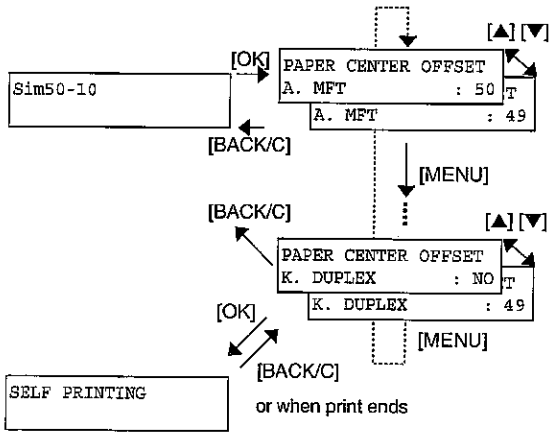
50 -10

Purpose	Adjustment
Function (Purpose)	Used to adjust the print image center position. (Adjustment is performed in each paper feed position separately.)
Section	Image process (ICU)
Item	Picture quality Image position
Operation/ Procedure	1. Select the adjustment item (A – G) with the [MENU] key, and adjust the point adjustment value with [▲] [▼] keys. 2. Set the print conditions (H–K) by the similar operations. 3. When the [OK] key is pressed, the test pattern corresponding to the set value is printed.

When test pattern print ready	READY LED ON
Test pattern printing disable	READY LED OFF
Test pattern printing	DATA LED flashing
JAM/When a trouble occurs.	ERROR LED flashing

Item	Display	Content	Set range	Default
A	MFT	Print off-center adjustment value (Manual paper feed)	1 – 99	50
B	CS1	Print off-center adjustment value (1 cassette)	1 – 99	50
C	CS2	Print off-center adjustment value (2 cassette)	1 – 99	50
D	CS3	Print off-center adjustment value (3 cassette)	1 – 99	50
E	CS4	Print off-center adjustment value (4 cassette)	1 – 99	50
F	LCC	Print off-center adjustment value (LCC)	1 – 99	50
G	ADU	Print off-center adjustment value (ADU)	1 – 99	50
H	MULTI COUNT	Print quantity	1 – 999	1
I	PAPER	Paper feed tray selection	MFT/ CS1/ CS2/ CS3/ CS4/ LCC	2 (CS1)
J	EXIT TRAY	Paper exit tray selection	R/S	1
K	DUPLEX	Duplex print selection	NO/ YES	1

- When the adjustment value of items A – G is decreased by 1, the main scanning print position shifts 0.1mm toward the front side.
- When the adjustment value of items A – G is increased by 1, the main scanning print position shifts 0.1mm toward the rear side.
- When printing is executed during selection of items A – F, paper is fed from the paper feed tray of the selected item.



50 -20

Purpose	Adjustment
Function (Purpose)	Used to adjust the image registration. (Manual adjustment)
Item	Picture quality Image position
Operation/ Procedure	1. Select the adjustment item (A – F) with the [MENU] key, and adjust the point adjustment value with [▲] [▼] keys. 2. Set the print conditions (G–J) by the similar operations. 3. When the [OK] key is pressed, the test pattern corresponding to the set value is printed.

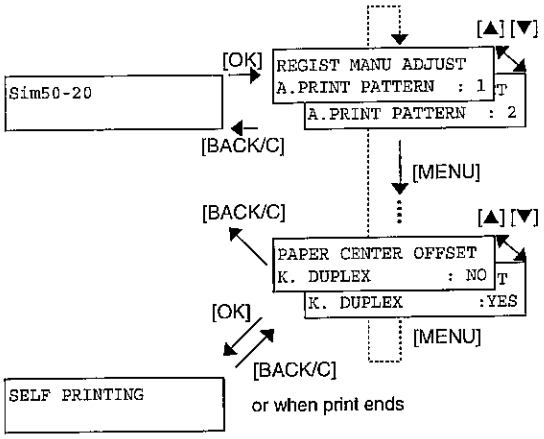
When test pattern print ready	READY LED ON
Test pattern printing disable	READY LED OFF
Test pattern printing	DATA LED flashing
JAM/When a trouble occurs.	ERROR LED flashing

(Set items)

Item	Display	Content	Set range	Default
A	PRINT PATTERN	Print pattern selection 1. The main pattern and the sub pattern are continuously printed. 2: MAIN PATTERN 3: SUB PATTERN	1 – 3	1
B	MAIN-REGIST C1	Main scanning direction registration adjustment (C)	12 – 88	50
C	MAIN-REGIST M1	Sub scanning direction registration adjustment (C)	12 – 88	50
D	MAIN-REGIST Y1	Main scanning direction registration adjustment (M)	12 – 88	50
E	SUB-REGIST C2	Sub scanning direction registration adjustment (M)	1 – 132	50
F	SUB-REGIST M2	Main scanning direction registration adjustment (Y)	1 – 132	50
G	SUB-REGIST Y2	Sub scanning direction registration adjustment (Y)	1 – 132	50
H	MULTI COUNT	Adjustment pattern print quantity	1 – 999	1

Item	Display	Content	Set range	Default
I	PAPER	Paper feed tray selection	MFT/ CS1/ CS2/ CS3/ CS4/ LCC	CS1
J	EXIT TRAY	Paper exit tray selection	R/S	R
K	DUPLEX	Duplex print selection	NO/ YES	NO

* When the adjustment value of item B, C, or D is decreased by 1, the corresponding LED lighting position is shifted to the front side by 1 pixel.
* When the adjustment value of item E, F, or G is decreased by 1, the corresponding LED lighting position is shifted to the lead edge side by 1 pixel.
* Items for storing to EEP_ROM are B – K.



50 -22	
Purpose	Adjustment
Function (Purpose)	Used to adjust the image registration. (Automatic adjustment)
Item	Picture quality
Operation/ Procedure	1. When the [MENU] key is pressed, the display of set value of main scanning and sub scanning is switched.

2. When the [OK] key is pressed, DATA LED flashes and the automatic adjustment of registration is started. The time required for each adjustment is as follows:
   - Main scanning: fine adjustment/15s
   - Sub scanning: Fine adjustment/30s
   - Main scanning: rough adjustment/5s
   - Sub scanning: Rough adjustment/5s
   - Main scanning: rough adjustment/5s
   - Sub scanning: Rough adjustment/5s
3. After completion of registration adjustment, the DATA LED turns off and the adjustment result is displayed.
   - Normal completion OK
   - Abnormal completion: NG + details of error

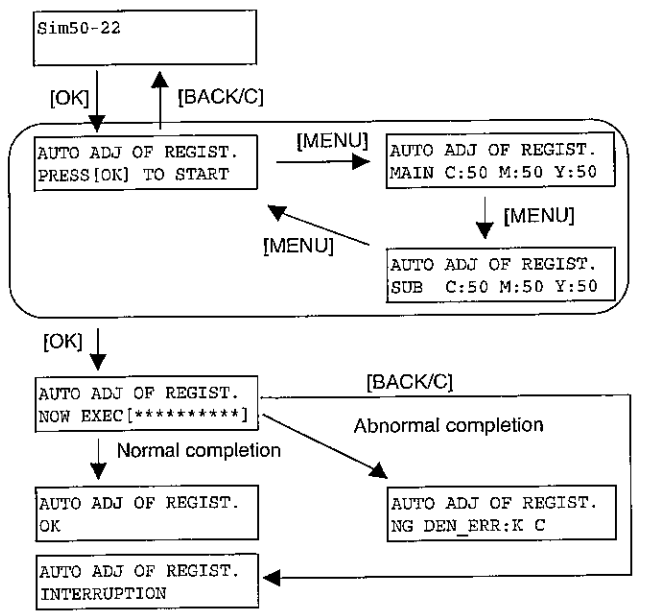
   (When the [MENU] key is pressed, the previous adjustment value is displayed.)

* When the adjustment is forcibly interrupted ([BACK/C] key is pressed or the door is opened) during DATA LED is lighted, "INTERRUPTION" is displayed.

(Display items)

Display	Content	Set range	Default
MAIN C	Main scanning direction registration adjustment (C)	12 – 88	50
SUB C	Sub scanning direction registration adjustment (C)	1 – 132	50
MAIN M	Main scanning direction registration adjustment (M)	12 – 88	50
SUB M	Sub scanning direction registration adjustment (M)	1 – 132	50
MAIN Y	Main scanning direction registration adjustment (Y)	12 – 88	50
SUB Y	Sub scanning direction registration adjustment (Y)	1 – 132	50

Error display	Content
SEN_ADJ_ERR	Sensor adjustment abnormality
DEN_ERR K	Black density error
DEN_ERR C	Cyan density error
DEN_ERR M	Magenta density error
DEN_ERR Y	Yellow density error
MF_ERR C	Cyan main scanning fine adjustment error
MF_ERR M	Magenta main scanning fine adjustment error
MF_ERR Y	Yellow main scanning fine adjustment error
SF_ERR C	Cyan sub scanning fine adjustment error
SF_ERR M	Magenta sub scanning fine adjustment error
SF_ERR Y	Yellow sub scanning fine adjustment error
MR1_ERR C	Cyan main scanning rough adjustment 1 error
MR1_ERR M	Magenta main scanning rough adjustment 1 error
MR1_ERR Y	Yellow main scanning rough adjustment 1 error
SR1_ERR C	Cyan sub scanning rough adjustment 1 error
SR1_ERR M	Magenta sub scanning rough adjustment 1 error
SR1_ERR Y	Yellow sub scanning rough adjustment 1 error
MR2_ERR C	Cyan main scanning rough adjustment 2 error
MR2_ERR M	Magenta main scanning rough adjustment 2 error
MR2_ERR Y	Yellow main scanning rough adjustment 2 error
SR2_ERR C	Cyan sub scanning rough adjustment 2 error
SR2_ERR M	Magenta sub scanning rough adjustment 2 error
SR2_ERR Y	Yellow sub scanning rough adjustment 2 error
OTHERS_ERR	Other errors



50 -24	
Purpose	Adjustment
Function (Purpose)	Used to display the adjustment data of automatic registration.
Item	Picture quality　　Image position
Operation/ Procedure	1. Specify the display item with the [MENU] key. 2. Select the display content with [▲] [▼] keys.

(Display items)

Display			Content	Set range	Default
A	SENSOR	OUTPUT	LED light emitting quantity after sensor adjustment	1 – 255	34
		INPUT	LED light receiving quantity when determining the LED light emitting quantity	0 – 255	0
B	MAIN FINE	C(*) M(*) Y(*) *: 1 – 11	Sensor scanning/ calculation result in the patch of each color when main scanning/fine adjustment.	0 – 9999	0
C	MAIN ROUGH1	C(*) M(*) Y(*) * : 1 – 4	Sensor scanning/ calculation result in the patch of each color when main scanning/rough adjustment.	0 – 9999	0
D	MAIN ROUGH1	K(*) * : 1 – 4	Sensor scanning/ calculation result in the patch of each color when main scanning/rough adjustment.	0 – 9999	0
E	MAIN ROUGH2	C(*) M(*) Y(*) *: 1 – 2	Sensor scanning/ calculation result in the patch of each color when main scanning/the second stage rough adjustment.	0 – 9999	0
F	MAIN ROUGH2	K(*) * 1 – 2	Sensor scanning/ calculation result in the patch of each color when main scanning/the second stage rough adjustment.	0 – 9999	0
G	MAIN RESULT	C M Y	Current resist adjustment value (Main scanning)	12 – 88	50
H	SUB FINE	C(*) M(*) Y(*) *: 1 – 11	Sensor scanning/ calculation result in the patch of each color when sub scanning/fine adjustment.	0 – 9999	0
I	SUB ROUGH1	C(*) M(*) Y(*) * : 1 – 4	Sensor scanning/ calculation result in the patch of each color when sub scanning/rough adjustment.	0 – 9999	0
J	SUB ROUGH2	C(*) M(*) Y(*) *1 – 3	Sensor scanning/ calculation result in the patch of each color when sub scanning/the second stage rough adjustment.	0 – 9999	0
K	SUB RESULT	C M Y	Current resist adjustment value (Sub scanning)	1 – 132	50
L	DENSITY CHECK	K	K color density check patch sensor reading/calculation result	0 – 9999	0
		C	C color density check patch sensor sensing result	0 – 9999	0
		M	M color density check patch sensor reading/calculation result	0 – 9999	0
		Y	Y color density check patch sensor reading/calculation result	0 – 9999	0
M	ERROR RECORD	1	The newest error history	0 – 99	0
		2	Previous error history	0 – 99	0
		3	Previous, previous error history	0 – 99	0
		4	Previous, previous, previous error history	0 – 99	0
		5	The oldest error history	0 – 99	0
N	REGIST COUNT	REGIST	Resist counter	0 – 9999	0
		EXECUTE	Number of times of execution	0 – 9999	0

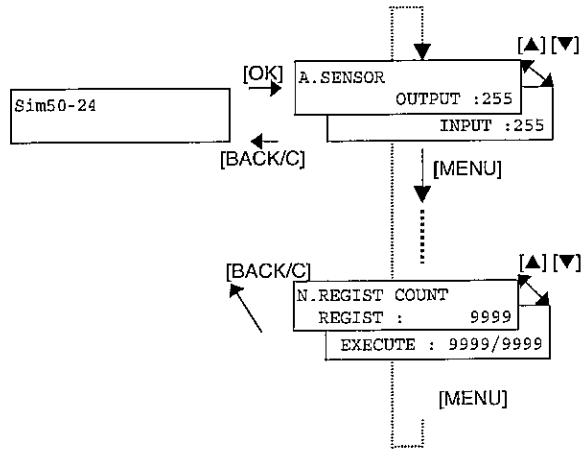
*1: Error code and its content

00: No error
01: Belt element defect
02: Insufficient Black patch density
03: Insufficient Cyan patch density
04: Insufficient Magenta patch density
05: Insufficient Yellow patch density
06: Main scanning direction fine adjustment Cyan patch print error
07: Main scanning direction fine adjustment Magenta patch print error
08: Main scanning direction fine adjustment Yellow patch print error
09: Sub scanning direction fine adjustment Cyan patch print error
10: Sub scanning direction fine adjustment Magenta patch print error
11: Sub scanning direction fine adjustment Yellow patch print error
12: Main scanning direction rough adjustment 1 Cyan patch print error
13: Main scanning direction rough adjustment 1 Magenta patch print error
14: Main scanning direction rough adjustment 1 Yellow patch print error
15: Sub scanning direction rough adjustment 1 Cyan patch print error
16: Sub scanning direction rough adjustment 1 Magenta patch print error
17: Sub scanning direction rough adjustment 1 Yellow patch print error
18: Main scanning direction rough adjustment 2 Cyan patch print error
19: Main scanning direction rough adjustment 2 Magenta patch print error

20: Main scanning direction rough adjustment 2 Yellow patch print error
21: Sub scanning direction rough adjustment 2 Cyan patch print error
22: Sub scanning direction rough adjustment 2 Magenta patch print error
23: Sub scanning direction rough adjustment 2 Yellow patch print error
98: Regist sensor adjustment error
99: Other error

Item			Backup variable name
A	SENSOR	OUTPUT	bupSimPccLedAdjReg
		INPUT	bupSimLedSensorOutput
B	MAIN FINE	C(*) M(*) Y(*) *: 1 – 11	bupSimLedRegiCMFS1 ... bupSimLedRegiCMFS11
			bupSimLedRegiMMFS1 ... bupSimLedRegiMMFS11
			bupSimLedRegiYMFS1 ... bupSimLedRegiYMFS11
C	MAIN ROUGH1	C(*) M(*) Y(*) * : 1 – 4	bupSimLedRegiCMR1S1 ... bupSimLedRegiCMR1S4
			bupSimLedRegiMMR1S1 ... bupSimLedRegiMMR1S4
			bupSimLedRegiYMR1S1 ... bupSimLedRegiYMR1S4
D	MAIN ROUGH1	K(*) * : 1 – 4	bupSimPccRegKMR1S1 ... bupSimPccRegKMR1S4
E	MAIN ROUGH2	C(*) M(*) Y(*) *: 1 – 2	bupSimLedRegiCMR2S1, bupSimLedRegiCMR2S2
			bupSimLedRegiMMR2S1, bupSimLedRegiMMR2S2
			bupSimLedRegiYMR2S1, bupSimLedRegiYMR2S2
F	MAIN ROUGH2	K(*) *: 1 – 2	bupSimPccRegKMR2S1 ... bupSimPccRegKMR2S2
G	MAIN RESULT	C M Y	bupSimLedRegMainAdjC
			bupSimLedRegMainAdjM
			bupSimLedRegMainAdjY
H	SUB FINE	C(*) M(*) Y(*) *: 1 – 11	bupSimLedRegiCSFS1 ... bupSimLedRegiCSFS11
			bupSimLedRegiMSFS1 ... bupSimLedRegiMSFS11
			bupSimLedRegiYSFS1 ... bupSimLedRegiYSFS11
I	SUB ROUGH1	C(*) M(*) Y(*) * : 1 – 4	bupSimLedRegiCSR1S1 ... bupSimLedRegiCSR1S4
			bupSimLedRegiMSR1S1 ... bupSimLedRegiMSR1S4
			bupSimLedRegiYSR1S1 ... bupSimLedRegiYSR1S4
J	SUB ROUGH2	C(*) M(*) Y(*) *: 1 – 3	bupSimLedRegiCSR2S1 ... bupSimLedRegiCSR2S3
			bupSimLedRegiMSR2S1 ... bupSimLedRegiMSR2S3
			bupSimLedRegiYSR2S1 ... bupSimLedRegiYSR2S3
K	SUB RESULT	C M Y	bupSimLedRegSubAdjC
			bupSimLedRegSubAdjM
			bupSimLedRegSubAdjY
L	DENSITY CHECK	K	bupSimLedRegiDenChkK
		C	bupSimLedRegiDenChkC
		M	bupSimLedRegiDenChkM
		Y	bupSimLedRegiDenChkY
M	ERROR RECORD	1	bupSimRegErrRecode[0]
		2	bupSimRegErrRecode[1]
		3	bupSimRegErrRecode[2]
		4	bupSimRegErrRecode[3]
		5	bupSimRegErrRecode[4]

Item			Backup variable name
N	REGIST COUNT	REGIST	bupSimPcsAtRegCntH
		EXECUTE	bupSimRegExecNomCnt,bupSimRegExecErrCnt

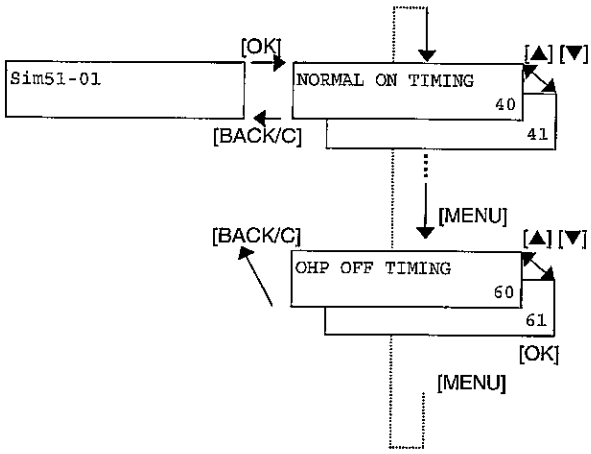


51

51 -01	
Purpose	Adjustment
Function (Purpose)	Used to adjust the transfer voltage ON timing.
Section	Process (Photoconductor, developing, Transfer, cleaning)
Item	Operation
Operation/ Procedure	1. Specify the mode with the [MENU] key. 2. Adjust the transfer timing set value of the mode set with [▲] [▼] keys. 3. When the [OK] key is pressed, DATA LED lights up and the set value is set.

Item		Description on item	Set range	Default
A	NORMAL ON TIMING	Used to set the transfer ON timing for the paper lead edge of normal paper/heavy paper.	1 – 99	40
B	NORMAL OFF TIMING	Used to set the transfer OFF timing for the paper rear edge of normal paper/heavy paper.	1 – 99	60
C	OHP ON TIMING	Used to set the transfer ON timing for the paper lead edge of OHP.	1 – 99	40
D	OHP OFF TIMING	Used to set the transfer OFF timing for the paper rear edge of OHP.	1 – 99	60

- When the set value is decreased by 1, the transfer timing is quickened by about 10ms for the timing of the paper lead edge (or the rear edge) passing just under each color drum. When the set value is increased by 1, the transfer timing at the initial value of each item is as shown below.
- NML ON-TIMING: 40 (Transfer operation is turned on before about 100ms from when the paper lead edge passes just under the drum.)
- NML OFF-TIMING: 60 (Transfer operation is turned off after about 100ms from when the paper rear edge passes just under the drum.)
- OHP ON-TIMING: 40 (Transfer operation is turned on before about 100ms from when the paper lead edge passes just under the drum.)
- OHP OFF-TIMING: 60 (Transfer operation is turned off after about 100ms from when the paper rear edge passes just under the drum.)



51 -02

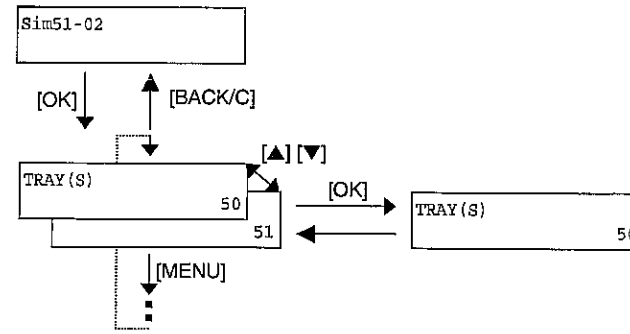
Purpose	Adjustment
Function (Purpose)	Used to adjust the contact pressure of paper on the resist roller of each section (each paper feed and duplex feed of the copier). (This adjustment is required when the print image position variations are considerably great or when paper jams occur frequently.)
Section	Paper transport (Paper exit, switchback, transport)
Item	Operation
Operation/ Procedure	1. Select the tray with the [MENU] key. 2. Set the resist adjustment value with [▲] [▼] keys. 3. When the [OK] key is pressed, DATA LED flashes and the set value is set.

(Items to be set)

	Display	Content	Min. value	Max. value	Default
1	TRAY (S)	Cassette tray resist adjustment value (Small size)	1	99	15
2	LCC	LCC tray resist adjustment value	1	99	25
3	ADU (S)	ADU resist adjustment value (Small size)	1	99	30
4	MANUAL PLAIN (S)	Manual feed tray resist adjustment value (Normal paper, small size)	1	99	50
5	MANUAL HEAVY 1	Manual feed tray resist adjustment value (Heavy paper 1)	1	99	50
6	MANUAL HEAVY 2	Manual feed tray resist adjustment value (Heavy paper 2)	1	99	50
7	MANUAL OHP1	Manual feed tray resist adjustment value (OHP 1)	1	99	50
8	MANUAL OHP2	Manual feed tray resist adjustment value (OHP 2)	1	99	50
9	MANUAL ENV	Manual feed tray resist adjustment value (Envelope)	1	99	50
10	DESK(S)	Desk tray resist adjustment value (Small size)	1	99	30
11	DESK(L)	Desk tray resist adjustment value (Large size)	1	99	30
12	MANUAL PLAIN (L)	Manual feed tray resist adjustment value (Normal paper, large size)	1	99	75
13	TRAY(L)	Cassette tray deflection adjustment value (Large size)	1	99	25
14	ADU(L)	ADU deflection adjustment value (Large size)	1	99	30

- Used to set the resist roller clutch (RRC) ON timing. When the adjustment value is increased, the timing is delayed and the pressure of paper onto the resist roller is increased.
- When the set value is changed by 1, the timing is changed by about 1.0ms.

* Paper size judgment method in the cassette tray paper feed, the paper size smaller than 170mm is regarded as the small size. In the desk tray or ADU paper feed, the paper size of 216mm or smaller is regarded as the small size. In the manual paper feed tray paper feed, the paper area of 49128mm² (184 x 267) or less is regarded as the small size.



52

52 -01

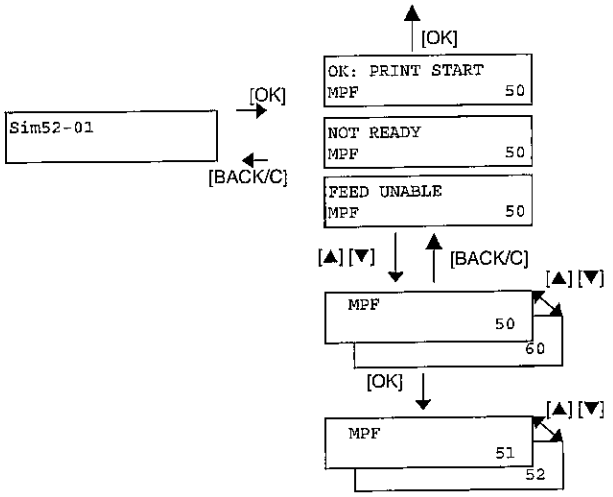
Purpose	Adjustment
Function (Purpose)	Used to adjust the duplex print mode stacking capacity (Used to adjust the stop position of the duplex unit paper tray width alignment plate. The home position of the width alignment plate is changed by software.)
Section	Duplex
Item	Operation
Operation/ Procedure	1. Select the adjustment tray with the [MENU] key. • Upper stage display: Current ENG state OK PRINT START/The machine is ready to feed paper. (LED ON) NOT READY/The machine is unable to feed paper. (LED OFF) FEEDUNABLE/Tray is unable to feed (LED OFF) • Lower stage display: The current ADU alignment plate adjustment value of each tray 2. TO change the set value, set the value with [▲] [▼] keys and press the [OK] key to set. (When one digit is set, the digit to be set is shifted.) 3. When the [OK] key is pressed with the ENG in "OK PRINT START" state, a sheet of paper is transported from the selected tray to the ADU, and the alignment plate adjustment is performed according to the set value and the machine stops. When there is paper in the ADU ("NOT READY" is displayed), only the alignment plate adjustment is made. * The paper sizes which can be used for transport and alignment plate adjustment with SIM52-01 are LT, LTR, A4, A4R, B5, B5R, 16K, and 16KR only. (For the other sizes, "FEED ENABLE" occurs.)

* In the alignment plate adjustment mode, jam detection for paper in the ADU is not performed. However, jam detection of other than the ADU (machine jam, bypass jam) is performed. If a jam is detected, SIM52-01 is canceled and the ENG state keeps "NOT READY" and paper transport cannot be made unless the jam is canceled.

(Set items)

Item		Set range	Default
MPF	Intermediate tray alignment plate adjustment value (Manual feed)	0 – 99	50
TRAY 1	Intermediate tray alignment plate adjustment value (Cassette 1)	0 – 99	50
TRAY 3	Intermediate tray alignment plate adjustment value (Cassette 3)	0 – 99	50
TRAY 4	Intermediate tray alignment plate adjustment value (Cassette 4)	0 – 99	50
LCC	Intermediate tray alignment plate adjustment value (LCC)	0 – 99	50

- When the set value is changed by 1, it is changed by about 0.2mm. When the set value is increased, the alignment plate paper width is narrowed. The adjustment value can be adjusted in the increment of ±50 with 50 as the center value.



61

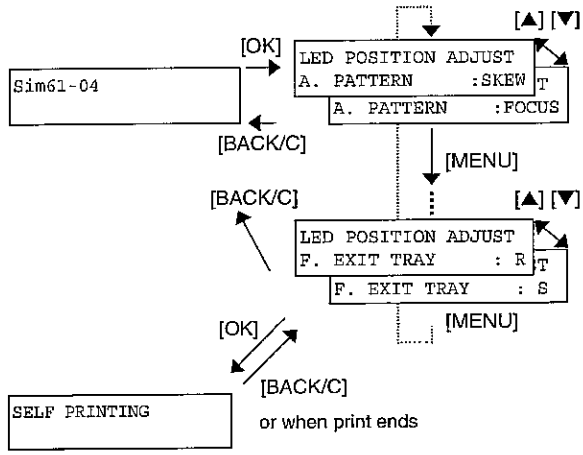
61 -04	
Purpose	Adjustment
Function (Purpose)	Used to adjust the LED unit skew.
Section	Scanner (writing)
Item	Operation
Operation/ Procedure	1. Select the adjustment item with the [MENU] key, and set the print condition of the adjustment pattern. with [▲] [▼] keys. 2. When the [OK] key is pressed, the test pattern corresponding to the set value is printed.

When test pattern print ready	READY LED ON
Test pattern printing disable	READY LED OFF
Test pattern printing	DATA LED flashing
JAM/When a trouble occurs.	ERROR LED flashing

(Items to be set)

Display		Content	Set range	Default
A	PATTERN	Print pattern specification SKEW--- Used to check scan tilt. FOCUS --- Used to check/adjust focus.	SKEW/ FOCUS	SKEW
B	LINE PITCH	Dot print width (N-1) specification	1 – 10	7
C	POSITION	Pattern output area selection	1 – 12	6
D	MULTI COUNT	Print quantity selection	1 – 999	1
E	PAPER	Paper feed tray selection	(MFT/CS1 /CS2/CS3 /CS4/LCC)	CS1
F	EXIT TRAY	Paper exit tray selection	R/S	R

* Items for storing to EEP_ROM are D – F.



64

64 -01	
Purpose	Operation test/check
Function (Purpose)	Used to adjust the operations of the printer section (self-print operation/color). (The print pattern, paper feed mode, print mode, print quantity, and density can be changed optionally.)
Section	Printer
Item	Operation
Operation/ Procedure	1. Select the display item with the [MENU] key and set the details of the self print conditions with [▲] [▼] keys. 2. When the [OK] key is pressed, the self print pattern corresponding to the set condition is printed.

When self pattern print is ready:	READY LED ON
When self pattern print is unable:	READY LED OFF
During self pattern printing	DATA LED flashing
JAM/When a trouble occurs.	ERROR LED flashing

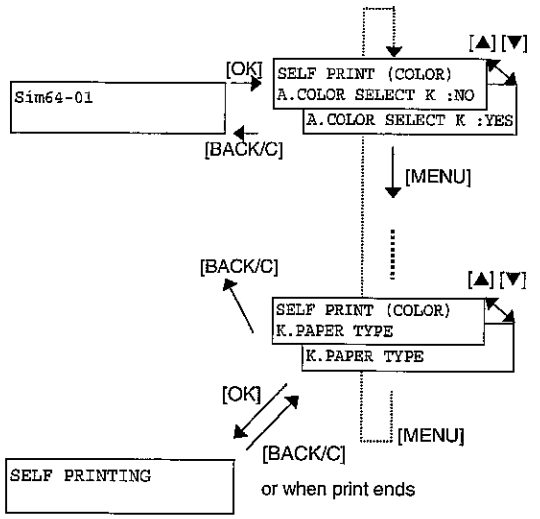
(Items to be set)

	Display	Content	Set range	Default
A	COLOR SELECT K	K color print/non-print setting	NO/YES	NO
B	COLOR SELECT C	C color print/non-print setting	NO/YES	NO
C	COLOR SELECT M	M color print/non-print setting	NO/YES	NO
D	COLOR SELECT Y	Y color print/non-print setting	NO/YES	NO
E	PRINT PATTERN	Print pattern specification (* For details, refer to the following.)	1 – 23 (12 – 19 cannot be specified.)	1
F	DENSITY	Print gradation specification	1 – 255	5
G	MULTI COUNT	Print quantity	1 – 999	1
H	PAPER	Paper feed tray selection	MFT/CS1/CS2/ CS3/CS4/LCC	CS1
I	EXIT TRAY	Paper exit tray selection	R/S	R
J	DUPLEX	Duplex print selection (NO, YES)	NO/YES	NO
K	PAPER TYPE	Paper kind selection PLAIN HEAVY 1 HEAVY 2 OHP 1 OHP 2 ENVELOPE	PLAIN/HEAVY1/ HEAVY2/OHP1/ OHP2/ENV	PLAIN

* Items for storing to EEP_ROM are E – J.

(Print pattern descriptions)

No.	Content	Pattern generating device	Color selection		Gradation selection	Density selection
			Condition	No color		
1	Grid pattern	LED	O	K only	Line width	×
2	Dot print	LED	O	K only	O	×
3	16 gradations: Sub scan	LED	O (Max. 3 colors)	K only	None	×
4	16 gradations: Main scan	LED	O (Max. 3 colors)	K only	None	×
5	Even pitch pattern (1 by 4): Sub scan	LED	O	K only	O	×
6	Even pitch pattern (1 by 4): Main scan	LED	O	K only	O	×
7	Even pitch pattern (2 by 6): Sub scan	LED	O	K only	O	×
8	Even pitch pattern (2 by 6): Main scan	LED	O	K only	O	×
9	Each color 10% (A4/A4R) density print	LED	5 (4 colors fixed)	—	Pattern width	×
10	8 color band print	LED	5 (4 colors fixed)	—	×	×
11	Even pitch pattern (1 by N-1) sub scan direction gradation	LED	O (Max. 3 colors)	K only	Interval width (N-1)	×
20	2-color background print	LED	O	K/Y only	O	×
21	2-color dot print	LED	O	K/Y only	O	×
22	4-color background print	LED	5 (4 colors fixed)	—	O	×
23	4-color dot print	LED	5 (4 colors fixed)	—	O	×



64 -03

Purpose	Operation test/check
Function (Purpose)	Used to check the operations of the printer section (self-print operation/BW). (The print pattern, the paper feed mode, the print mode, the print quantity, and the density can be set optionally.)
Section	Printer
Item	Operation
Operation/ Procedure	1. Select the display item with the [MENU] key and set the details of the self print conditions with [▲] [▼] keys. 2. When the [OK] key is pressed, the self print pattern corresponding to the set condition is printed.

When self pattern print is ready:	READY LED ON
When self pattern print is unable:	READY LED OFF
During self pattern printing	DATA LED flashing
JAM/When a trouble occurs.	ERROR LED flashing

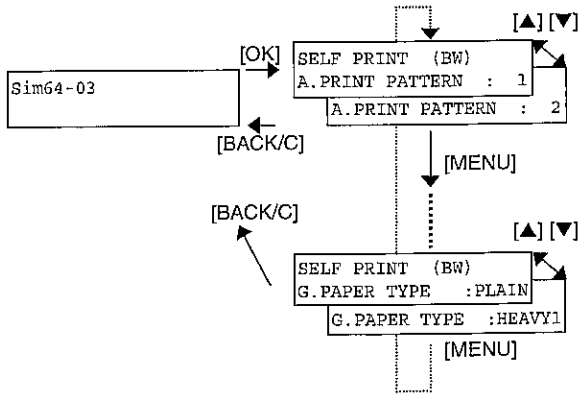
(Items to be set)

	Display	Content	Set range	Default
A	PRINT PATTERN	Print pattern specification (* For details, refer to the following.)	1 – 23 (12 – 19 cannot be specified.)	1
B	DENSITY	Print gradation specification	1 – 255	5
C	MULTI COUNT	Print quantity	1 – 999	1
D	PAPER	Paper feed tray selection	MFT/CS1/ CS2/ CS3/CS4/ LCC	CS1
E	EXIT TRAY	Paper exit tray selection	R/S	R
F	DUPLEX	Duplex print selection	NO/YES	NO
G	PAPER TYPE	Paper kind selection	PLAIN/ HEAVY1/ HEAVY2/ OHP1/ OHP2/ENV	PLAIN

- Details of each print pattern in item A

No.	Content	Pattern generating device	Gradation selection
1	Grid pattern	LED	Line width
2	Dot pattern (4dot pitch of 2dot print and 2dot space)	LED	O
3	16-grdation: sub scan	LED	None
4	16-gradation: main scan	LED	None
5	Even pitch pattern (1 by 4): sub scan	LED	O
6	Even pitch pattern (1 by 4): main scan	LED	O
7	Even pitch pattern (2 by 6): sub scan	LED	O
8	Even pitch pattern (2 by 6): main scan	LED	O
9	10% (A4/A4R) density print	LED	Pattern width
10	8-color band print	LED	X
11	Even pitch pattern (1 by N-1) sub scan direction gradation	LED	O
20	Half background print	LED	O
21	Half background dot print	LED	O
22	1/4 background print	LED	O
23	1/4 background dot print	LED	O

* The grid interval is 1079mm (255dot).
* 10% print color interval is 41.86mm: 989dot. Other than 1 – 13% is rounded.
* Patterns 12 – 19 cannot be selected.



64 -04

Purpose	Operation test/check
Function (Purpose)	Used to check the operations of the printer section (self-print operation/color). (The print pattern, the paper feed mode, the print mode, the print quantity, and the density can be set optionally.)
Section	Printer
Item	Operation
Operation/ Procedure	1. Select the display item with the [MENU] key and set the details of the self print conditions with [▲] [▼] keys. 2. When the [OK] key is pressed, the self print pattern corresponding to the set condition is printed.

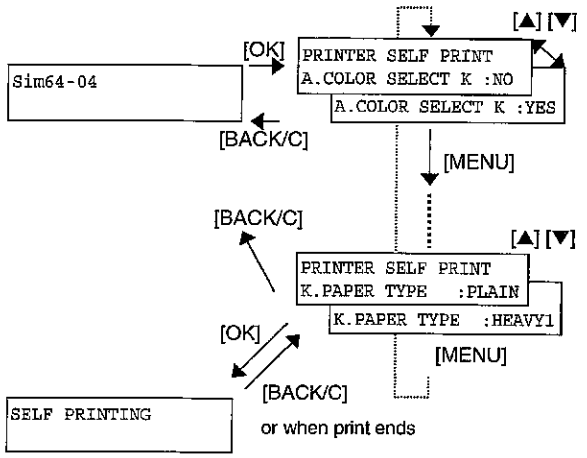
When self pattern print is ready:	READY LED ON
When self pattern print is unable:	READY LED OFF
During self pattern printing	DATA LED flashing
JAM/When a trouble occurs.	ERROR LED flashing

Item	Display	Content	Set range	Default
A	COLOR SELECT K	K color print/non-print setting	NO/YES (1 – 2)	NO
B	COLOR SELECT C	C color print/non-print setting	NO/YES (1 – 2)	NO
C	COLOR SELECT M	M color print/non-print setting	NO/YES (1 – 2)	NO
D	COLOR SELECT Y	Y color print/non-print setting	NO/YES (1 – 2)	NO
E	PRINT PATTERN	Print pattern specification	1 – 2 (Under prospects for addition)	1
F	DENSITY	Print gradation specification	1 – 2	1
G	MULTI COUNT	Print quantity	1 – 999	1
H	PAPER	Paper feed tray selection	MFT/CS1/CS2/CS3/CS4/LCC (1 – 6)	CS1
I	EXIT TRAY	Paper exit tray selection	R/S (1 – 2)	R
J	DUPLEX	Duplex print selection	NO/YES (1 – 2)	NO
K	PAPER TYPE	<table><tr><th>Paper kind</th><th>Paper feed</th><th>Paper exit</th></tr><tr><td>Normal paper</td><td>Cassette/Manual</td><td>FU/FD</td></tr><tr><td>Heavy paper 1</td><td>Manual only</td><td>FU/FD</td></tr><tr><td>Heavy paper 2</td><td>Manual only</td><td>FU only</td></tr><tr><td>OHP 1</td><td>Manual only</td><td>FU only</td></tr><tr><td>OHP 2</td><td>Manual only</td><td>FU only</td></tr><tr><td>Envelope</td><td>Manual only</td><td>FU only</td></tr></table>	PLAIN/HEAVY1/HEAVY2/ OHP1/OHP2/ENV (1 – 6)	PLAIN

* Items for storing to EEP_ROM are E – J.

(Print pattern descriptions)

No.	Content	Color selection		Gradation selection	Remarks
		Selected	No		
1	256 gradation pattern (COLOR)	O	K only	1: Straight 2: Caribration	C only/M only/Y only/K only/C & M/C & Y/M & Y executable, other settings round to K only.
2	256 gradation pattern (B/W)	×	K only	1: Straight 2: Caribration	Round to K only regardless of COLOR SELECT.
3	256 gradation pattern (Y-M-C-K serial)	×	×	1: Straight 2: Caribration	Y only, M only, C only, K only print sequently.



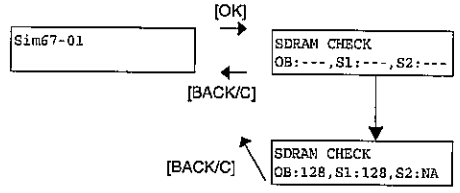
67

67 -01	
Purpose	Operation test/check
Function (Purpose)	Used to check the operations of printer DRAM read/write.
Section	Printer
Item	Operation
Operation/ Procedure	1. When SIM 67-1 is executed, "CHECKING" is displayed on the display and memory check of the PWB and the slot is started. 2. After checking, the memory size is displayed.If there is no memory installed, "NA" is displayed.

Display	Content
OB	Memory size on the PWB
S1	Slot 1 memory size
S2	Slot 2 memory size

*1. When the above occurs in the size check, "ERROR" is displayed.

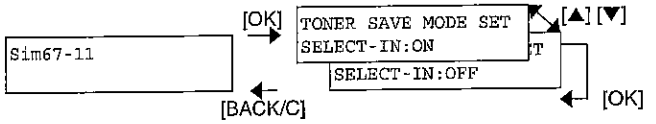
*2. The [BACK/C] key becomes valid when the display of all the PWB's and slots is completed.



67 -11

Purpose	Setting
Function (Purpose)	Used to set the printer parallel I/F SELECT IN signal.
Section	Printer
Item	Operation
Operation/ Procedure	Set ON/OFF of signal with [▲] [▼] keys, and pres the [OK] key to set. When a trouble occurs in communication between PC and the printer by use of the printer parallel I/F, change the setup content of this simulation.

Display		Content	Set range	Default
A	SELECT-IN	Centro I/F SELECT IN signal YES/NO setting	ON/ OFF	ON



67 -14

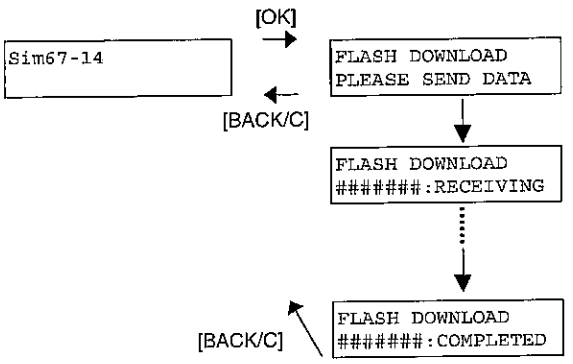
Purpose	Version up
Function (Purpose)	Used to perform version up of the firmware. (Printer)
Section	Firmware (Printer)
Item	Operation
Operation/ Procedure	When SIM67-14 is executed with the [OK] key, the printer ROM model is displayed and firmware version is updated in the following procedure.

1. ROM data receiving (RECEIVING)
2. ROM initializing (ERASING)
3. Use "fcopy" command on the PC side to download the firmware file.
4. ROM data writing (WRITING)
5. ROM data verifying (VERIFYING)
6. Update completed (COMPLETED)

* The [BACK/C] key becomes valid when "COMPLETED" is displayed.

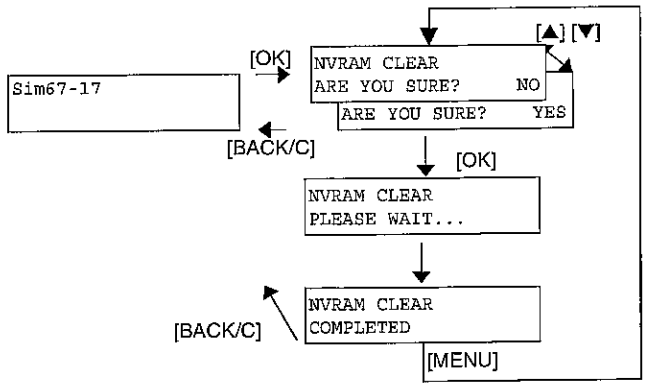
<Display in the above case>

* When the Flash ROM kind is improper: "ROM KIND ERROR" is displayed.
* When an error occurs during initializing the Flash ROM:"FLASH ERROR" is displayed.
* When an error occurs during verifying:"UPDATE ERROR" is displayed.



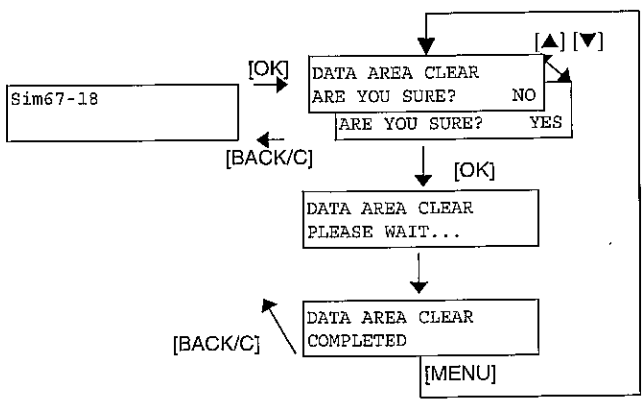
67 -17

Purpose	Data clear
Function (Purpose)	Used to clear NVRAM. (Printer)
Section	Printer
Item	Others
Operation/ Procedure	1. Execute SIM67-17 with the [OK] key to display the clear menu (NVRAM CLEAR). 2. Select the printer NVRAM clear or not with [▲] [▼] keys. YES: Clear NO: Not clear 3. When the [OK] key is pressed with YES selected, the DATA LED flashes to clear the data. 4. During the process, the display shows the message of "PLEASE WAIT." When the process is normally completed, the display shows "COMPLETED." In case of an error, "ERROR" is displayed. * During the process, all the keys are invalid.



67 -18

Purpose	Data clear
Function (Purpose)	Used to clear the Flash data. (Printer)
Section	Printer
Item	Others
Operation/ Procedure	1. Execute SIM67-17 with the [OK] key to display the clear menu (DATA AREA). 2. Select Flash data clear or not with [▲] [▼] keys. YES: Clear NO: Not clear 3. When the [OK] key is pressed with YES selected, the DATA LED flashes to clear the data. 4. During the process, the display shows the message of "PLEASE WAIT." When the process is normally completed, the display shows "COMPLETED." In case of an error, "ERROR" is displayed. * During the process, all the keys are invalid.



[10] MAINTENANCE LIST

1. Maintenance system table

×: Check (Clean, replace, or adjust as necessary.) ○: Clean ▲: Replace △: Adjust ☆: Lubricate □: Shift position

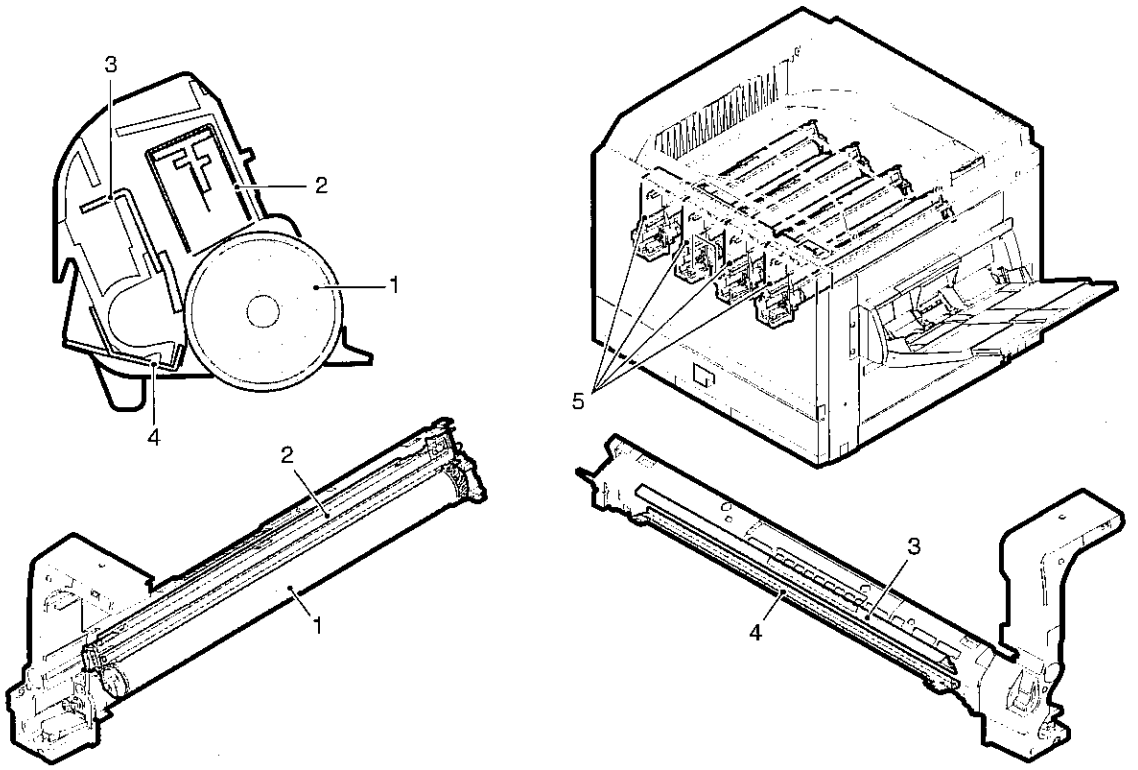
Unit Name	No.	Part name	When calling	50K	100K	150K	200K	250K	300K	350K	400K	Remark
Drum peripheral section	1	Drum (B/W, Color)		▲	▲	▲	▲	▲	▲	▲	▲	
	2	Charging unit		▲	▲	▲	▲	▲	▲	▲	▲	
	3	Cleaner blade		▲	▲	▲	▲	▲	▲	▲	▲	
	4	Toner reception seal		▲	▲	▲	▲	▲	▲	▲	▲	
	5	Drum cartridge		▲	▲	▲	▲	▲	▲	▲	▲	When replacing the unit
Developing section (integrated with toner cartridge)		Toner cartridge	Replaced by user when toner empty (or at the specified distance covered)									
Transfer section	1	Transfer belt		×	▲	×	▲	×	▲	×	▲	Replace at 100K or within 2 years.
	2	Transfer roller		×	▲	×	▲	×	▲	×	▲	
	3	Transfer belt cleaning blade		×	▲	×	▲	×	▲	×	▲	Replace at 100K or within 2 years.
	4	Transfer discharge sheet		×	○	×	○	×	○	×	○	
	5	Transfer belt cleaning roller		×	▲	×	▲	×	▲	×	▲	
	6	Transfer drive roller		×	×	×	×	×	×	×	×	
	7	Transfer follower roller		×	×	×	×	×	×	×	×	
	8	Transfer cleaning brush		×	×	×	×	×	×	×	×	
	9	Sensors		×	×	×	×	×	×	×	×	
	10	Waste toner tank unit	▲	×	▲	×	▲	×	▲	×	▲	When waste toner full is detected.
	11	Transfer belt unit		×	▲	×	▲	×	▲	×	▲	Replace the unit at 100K or within 2 years.
Fusing section	1	Upper heat roller	×	×	▲	×	▲	×	▲	×	▲	Replace at 100K or within 2 years.
	2	Lower heat roller	×	×	▲	×	▲	×	▲	×	▲	Replace at 100K or within 2 years.
	3	Heat roller gear	×	×	▲	×	▲	×	▲	×	▲	
	4	Heat roller bearing	×	×	▲	×	▲	×	▲	×	▲	
	5	Separation pawl	×	×	▲	×	▲	×	▲	×	▲	
	6	Thermistor	×	×	▲	×	▲	×	▲	×	▲	
	7	Bearings	×	×	×	×	×	×	×	×	×	
	8	Gears	×	☆	☆	☆	☆	☆	☆	☆	☆	
	9	Paper guides	○	○	○	○	○	○	○	○	○	
	10	Paper exit roller (Upper, lower)	×	×	×	×	×	×	×	×	×	Upper, lower
	11	Fusing unit		×	▲	×	▲	×	▲	×	▲	Replace the unit at 100K or within 2 years.
Paper feed section	1	Cassette section paper feed rollers	○	○	○	○	○	○	○	○	○	Replace according to the counter of each paper feed port or within 2 years.
	2	Torque limiter	×		×		×		×		×	
	3	Manual feed section paper feed rollers	○	×	×	×	×	×	×	×	×	Replace according to the counter of each paper feed port or within 2 years.
	4	Torque limiter	×	×	×	×	×	×	×	×	×	
Transport section	5	Transport rollers	○	○	○	○	○	○	○	○	○	
	6	Transport paper guides	○	○	○	○	○	○	○	○	○	
Image-related sections			×	×	×	×	×	×	×	×	×	
LED	1	LED lens	○	○	○	○	○	○	○	○	○	
Filters	1	Ozone filter	×	▲	▲	▲	▲	▲	▲	▲	▲	
	2	Sub ozone filter	×	▲	▲	▲	▲	▲	▲	▲	▲	
Drive section	3	Gears	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	4	Belts	×	×	×	×	×	×	×	×	×	
Others	5	Sensors	×		×		×		×		×	

2. List

A. Drum peripheral section

×: Check (Clean, replace, or adjust as necessary.) ○: Clean ▲: Replace △: Adjust ☆: Lubricate ❑: Shift position

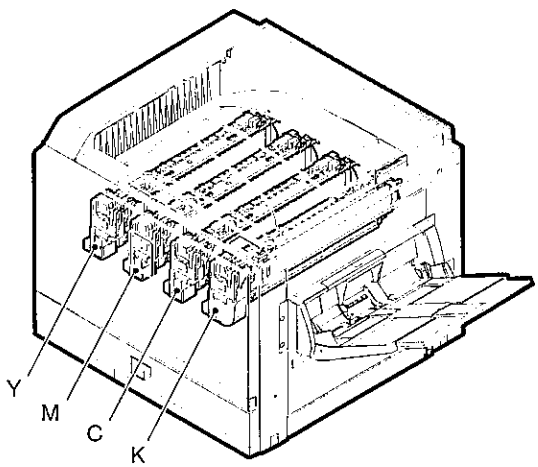
Unit Name	No.	Part name	When calling	50K	100K	150K	200K	250K	300K	350K	400K	Remark
Drum peripheral section	1	Drum (B/W, Color)		▲	▲	▲	▲	▲	▲	▲	▲	
	2	Charging unit		▲	▲	▲	▲	▲	▲	▲	▲	
	3	Cleaner blade		▲	▲	▲	▲	▲	▲	▲	▲	
	4	Toner reception seal		▲	▲	▲	▲	▲	▲	▲	▲	
	5	Drum cartridge		▲	▲	▲	▲	▲	▲	▲	▲	When replacing the unit



B. Developing section

×: Check (Clean, replace, or adjust as necessary.) ○: Clean ▲: Replace △: Adjust ☆: Lubricate ❑: Shift position

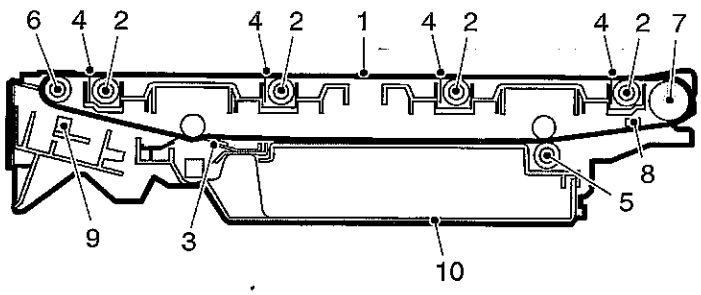
Unit Name	No.	Part name	When calling	50K	100K	150K	200K	250K	300K	350K	400K	Remark
Developing section (integrated with toner cartridge)		Toner cartridge	Replaced by user when toner empty (or at the specified distance covered)									

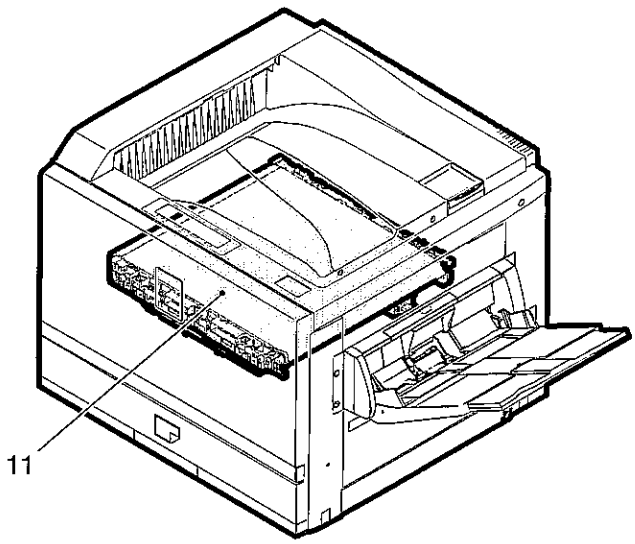


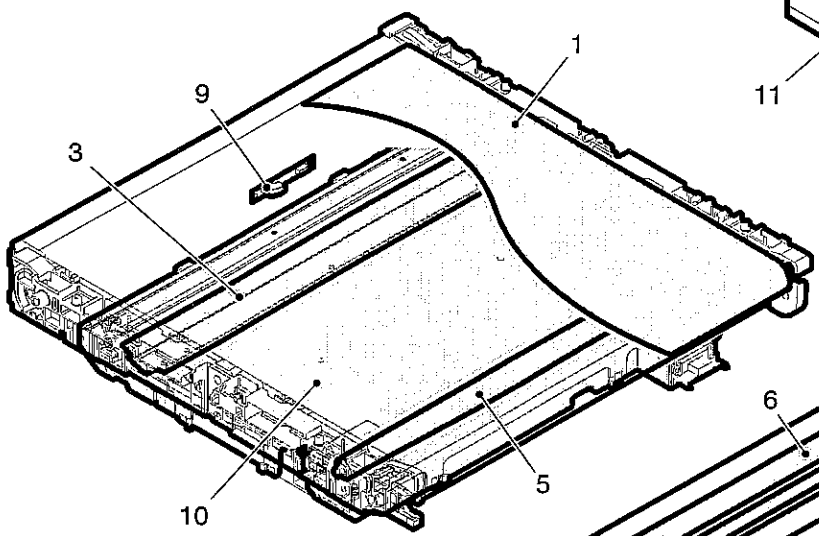
C. Transfer section

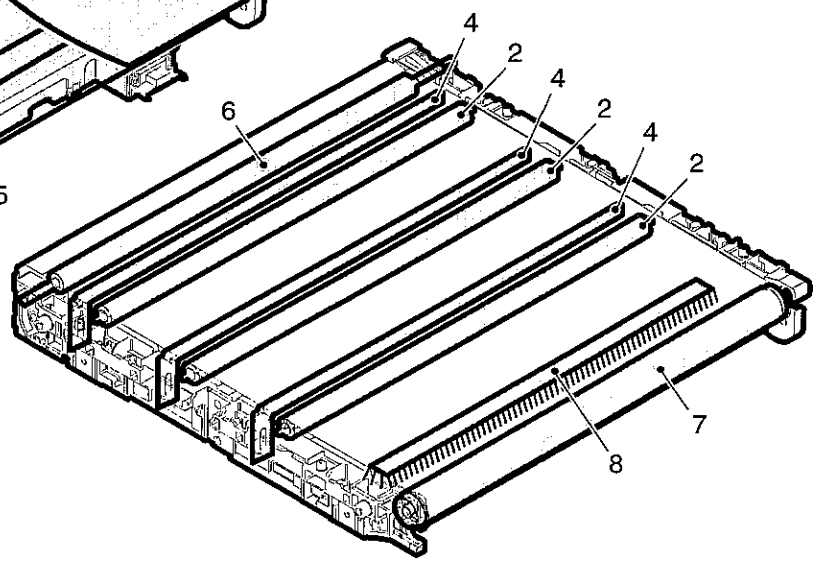
×: Check (Clean, replace, or adjust as necessary.) ○: Clean ▲: Replace △: Adjust ☆: Lubricate ❑: Shift position

Unit Name	No.	Part name	When calling	50K	100K	150K	200K	250K	300K	350K	400K	Remark
Transfer section	1	Transfer belt		×	▲	×	▲	×	▲	×	▲	Replace at 100K or within 2 years.
	2	Transfer roller		×	▲	×	▲	×	▲	×	▲	
	3	Transfer belt cleaning blade		×	▲	×	▲	×	▲	×	▲	Replace at 100K or within 2 years.
	4	Transfer discharge sheet		×	○	×	○	×	○	×	○	
	5	Transfer belt cleaning roller		×	▲	×	▲	×	▲	×	▲	
	6	Transfer drive roller		×	×	×	×	×	×	×	×	
	7	Transfer follower roller		×	×	×	×	×	×	×	×	
	8	Transfer cleaning brush		×	×	×	×	×	×	×	×	
	9	Sensors		×	×	×	×	×	×	×	×	
	10	Waste toner tank unit	▲	×	▲	×	▲	×	▲	×	▲	When waste toner full is detected.
	11	Transfer belt unit		×	▲	×	▲	×	▲	×	▲	Replace the unit at 100K or within 2 years.





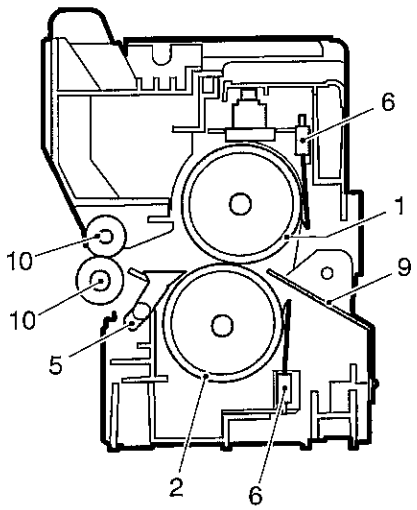


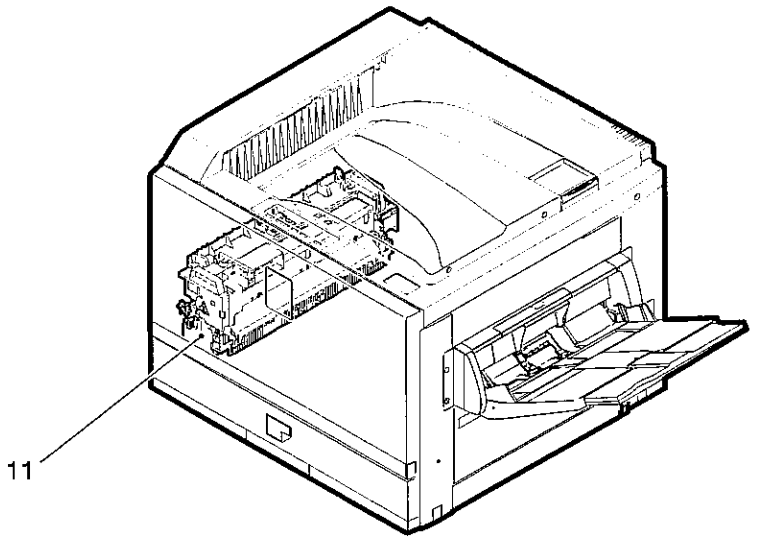


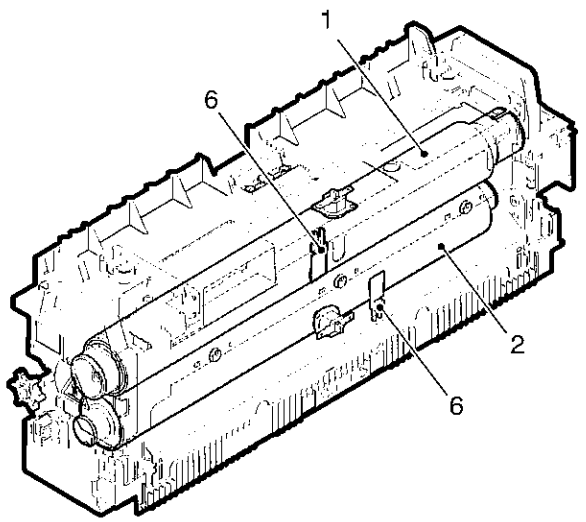
D. Fusing section

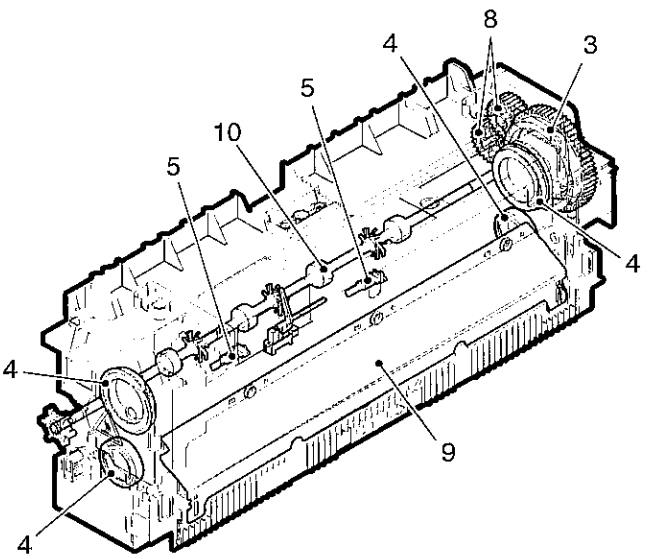
×: Check (Clean, replace, or adjust as necessary.) ○: Clean ▲: Replace △: Adjust ☆: Lubricate ❑: Shift position

Unit Name	No.	Part name	When calling	50K	100K	150K	200K	250K	300K	350K	400K	Remark
Fusing section	1	Upper heat roller	×	×	▲	×	▲	×	▲	×	▲	Replace at 100K or within 2 years.
	2	Lower heat roller	×	×	▲	×	▲	×	▲	×	▲	Replace at 100K or within 2 years.
	3	Heat roller gear	×	×	▲	×	▲	×	▲	×	▲	
	4	Heat roller bearing	×	×	▲	×	▲	×	▲	×	▲	
	5	Separation pawl	×	×	▲	×	▲	×	▲	×	▲	
	6	Thermistor	×	×	▲	×	▲	×	▲	×	▲	
	7	Bearings	×	×	×	×	×	×	×	×	×	
	8	Gears	×	☆	☆	☆	☆	☆	☆	☆	☆	
	9	Paper guides	○	○	○	○	○	○	○	○	○	
	10	Paper exit roller (Upper, lower)	×	×	×	×	×	×	×	×	×	Upper, lower
	11	Fusing unit		×	▲	×	▲	×	▲	×	▲	Replace the unit at 100K or within 2 years.





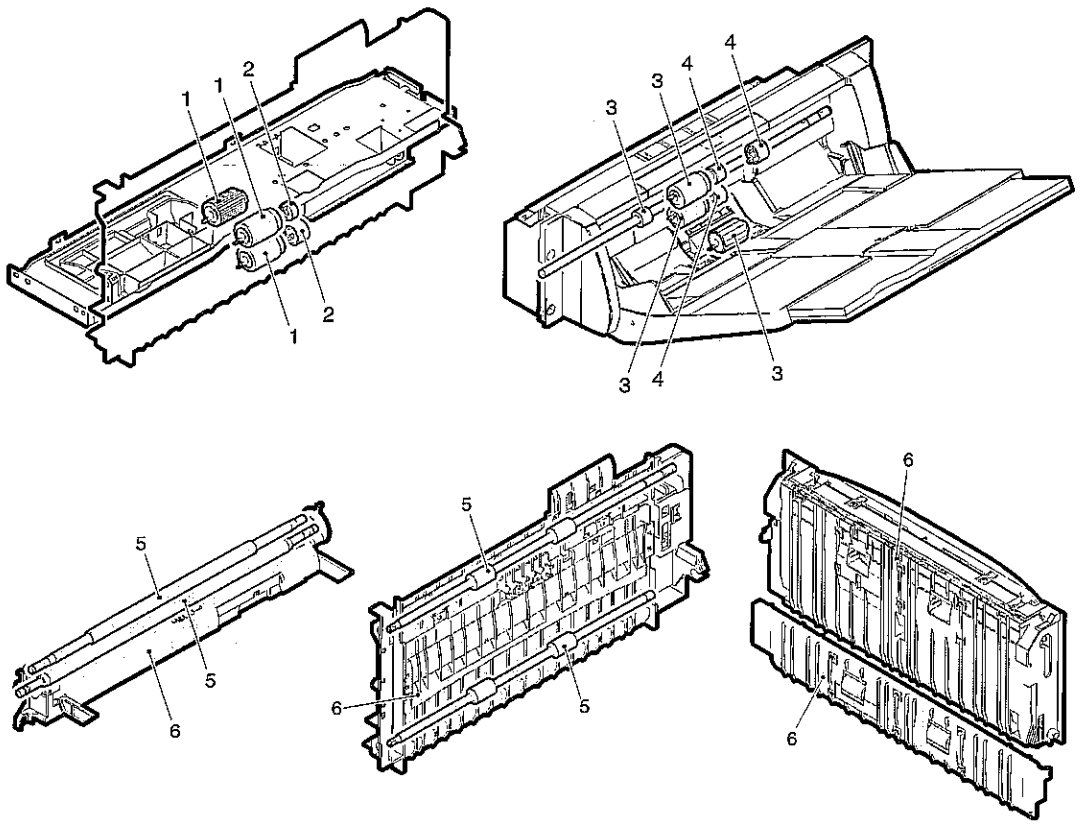




E. Paper feed section, transport section

X: Check (Clean, replace, or adjust as necessary.) O: Clean ▲: Replace △: Adjust ☆: Lubricate ❑: Shift position

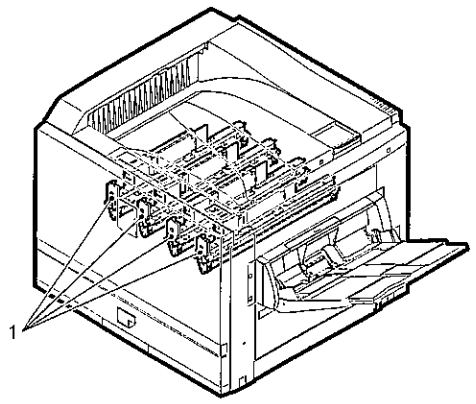
Unit Name	No.	Part name	When calling	50K	100K	150K	200K	250K	300K	350K	400K	Remark
Paper feed section	1	Cassette section paper feed rollers	O	O	O	O	O	O	O	O	O	Replace according to the counter of each paper feed port or within 2 years.
	2	Torque limiter	X		X		X		X		X	
	3	Manual feed section paper feed rollers	O	X	X	X	X	X	X	X	X	Replace according to the counter of each paper feed port or within 2 years.
	4	Torque limiter	X	X	X	X	X	X	X	X	X	
Transport section	5	Transport rollers	O	O	O	O	O	O	O	O	O	
	6	Transport paper guides	O	O	O	O	O	O	O	O	O	



F. LED

X: Check (Clean, replace, or adjust as necessary.) O: Clean ▲: Replace △: Adjust ☆: Lubricate ❑: Shift position

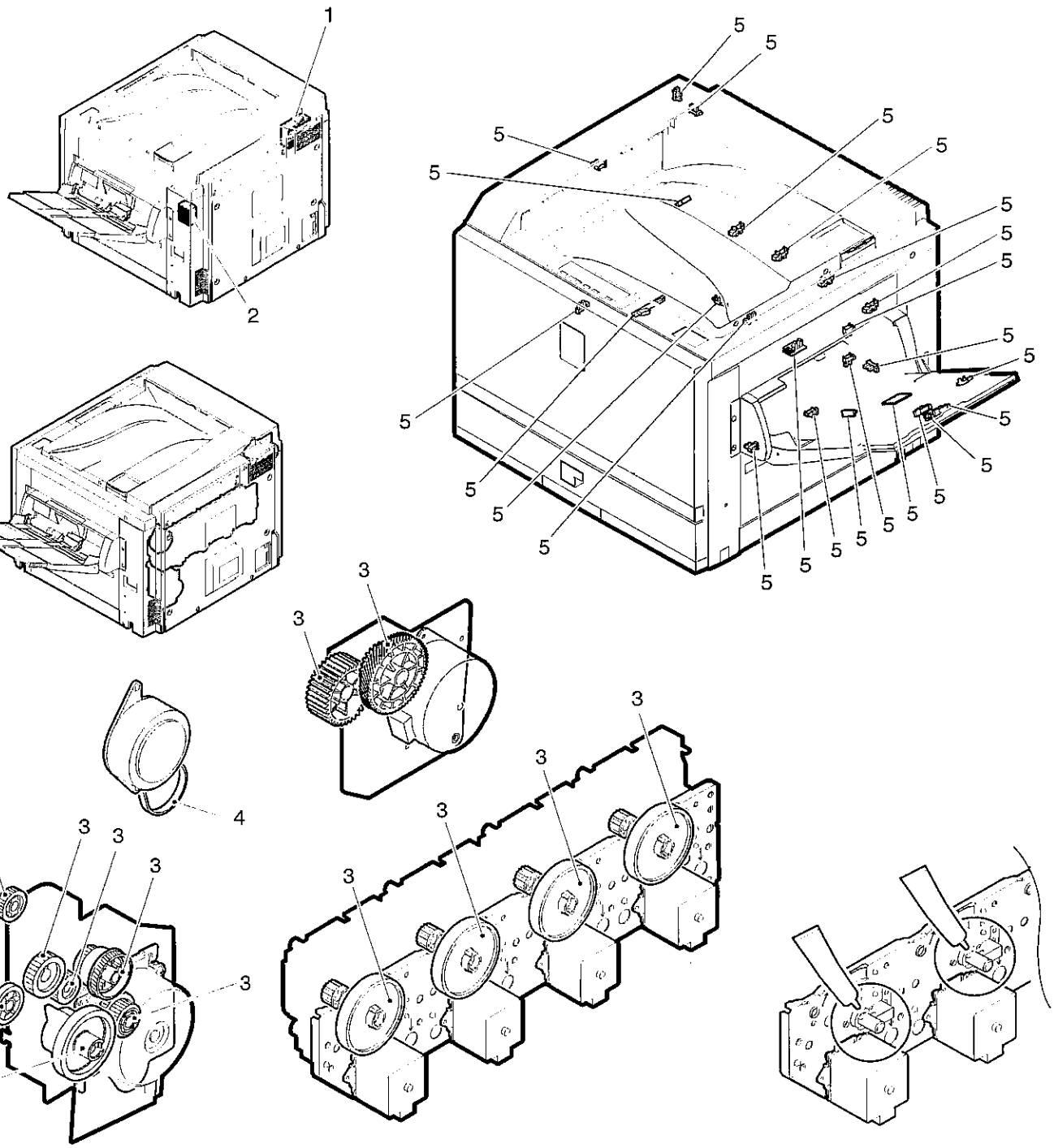
Unit Name	No.	Part name	When calling	50K	100K	150K	200K	250K	300K	350K	400K	Remark
LED	1	LED lens	O	O	O	O	O	O	O	O	O	



G. Filters, drive section, others

×: Check (Clean, replace, or adjust as necessary.) ○: Clean ▲: Replace △: Adjust ☆: Lubricate ❑: Shift position

Unit Name	No.	Part name	When calling	50K	100K	150K	200K	250K	300K	350K	400K	Remark
Filters	1	Ozone filter	×	▲	▲	▲	▲	▲	▲	▲	▲	
	2	Sub ozone filter	×	▲	▲	▲	▲	▲	▲	▲	▲	
Drive section	3	Gears	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	4	Belts	×	×	×	×	×	×	×	×	×	
Others	5	Sensors	×		×		×		×		×	



[11] TROUBLESHOOTING

1. Outline

In case of a trouble in the machine, or when a consumable part has nearly reached or already reach the lifetime, the machine detects it, analyze it, and displays it on the display section and notifies the user and the serviceman by a voice message.

The user and the serviceman are bale to perform the proper counter-measures according to a voice message. In case of a trouble, the machine is stopped to restrict damage to a minimum in addition to a voice message.

2. Functions and purposes

1) Assures safety. (The machine is stopped when a trouble is detected.)
2) Restricts damage to a minimum. (The machine is stopped when a trouble is detected.)
3) By displaying the trouble content, the trouble position can be identified immediately and accurately. (An accurate repair work can be performed, improving the repair efficiency.)
4) By providing a preparatory warning when the lifetime of a consumable part is nearly reached, arrangement of the consumable part can be made in advance. (Stopping the machine by exhaustion of a consumable part is avoidable.)

3. Kinds of self diagnostic messages

The self diagnostic messages are classified as follows:

Class 1	User	Troubles and warning messages (paper jam, consumable part life expiration, etc.) which can be processed by the user
	Service	Troubles and warning messages (motor trouble, maintenance, etc.) which can be processed only by a serviceman
	Other	—
Class 2	Warning	Warning messages (consumable part life expiration, etc.) for the user, which are not directly related to any machine trouble.
	Trouble	Related to a machine trouble. The machine is stopped.
	Other	—

4. Self diagnostic operation

A. Self diagnostic operation and work flow

The machine always monitors its own status.

When the machine detects a trouble, it stops operations and displays a trouble message.

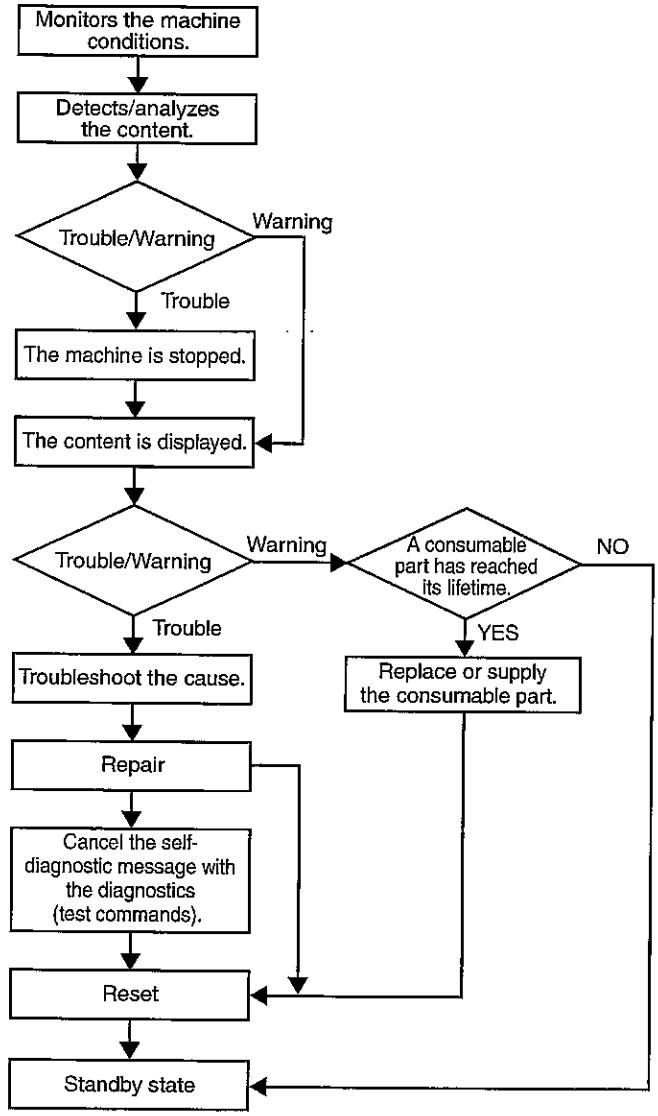
A warning message is provided mainly when a consumable part is nearly or completely exhausted.

When a warning message is provided, the machine may be stopped or may not be stopped depending on the message.

The trouble and warning messages are indicated with the LCD and lamps.

Some trouble messages may be automatically cleared after removing the trouble, and some must be cleared with the simulation.

Some warning messages of consumable parts are automatically cleared when the trouble is repaired. Some other warning messages must be cleared by a simulation.



5. List

Main code	Sub code	Content
C2	10	Image density sensor error/Transfer charger error (Black)
E7	01	Image data memory trouble
	07	ICU gate array abnormality
	20	LED controller initial trouble (Black)
	21	LED controller initial trouble (Cyan)
	22	LED controller initial trouble (Magenta)
	23	LED controller initial trouble (Yellow)
	24	LED controller output trouble (Black)
	25	LED controller output trouble (Cyan)
	26	LED controller output trouble (Magenta)
	27	LED controller output trouble (Yellow)
	28	LED control ASIC connection abnormality
	40	Color correction data writing abnormality
	41	Color correction data transfer abnormality
	90	ICU-PCU communication trouble (ICU detection)
F1	00	Finisher communication trouble (PCU detection)
	02	Finisher transport motor trouble (Finisher detection)
	03	Finisher paddle motor trouble
	06	Finisher slide motor trouble
	10	Finisher staple motor abnormality (Finisher detection)
	11	Finisher bundle process motor abnormality (Finisher detection)
	15	Finisher tray lift motor abnormality (Finisher detection)
	19	Finisher front alignment motor abnormality (Finisher detection)
	20	Finisher rear alignment motor abnormality (Finisher detection)
	31	Finisher fold sensor trouble
	32	Finisher punch unit communication trouble
	33	Finisher punch side registration motor trouble
	34	Finisher punch motor trouble
	35	Finisher punch side registration sensor trouble
	36	Finisher punch registration sensor trouble
	37	Finisher/sorter backup RAM trouble
	38	Finisher punch backup RAM trouble
	39	Finisher punch dust sensor trouble
	40	Finisher punch power disconnection trouble
	83	Guide bar oscillation motor (M3) lock
	89	Bin shift motor (M1) lock
	91	Bin paper sensor automatic adjustment trouble
F2	39	Process thermistor breakdown
	40	Toner empty sensor abnormality (Black)
	41	Toner empty sensor abnormality (Cyan)
	42	Toner empty sensor abnormality (Magenta)
	43	Toner empty sensor abnormality (Yellow)
	44	Black image density sensor trouble (Transfer belt surface reflection ratio abnormality)
	45	Color image density sensor trouble (Calibration plate surface reflection ratio abnormality)
	58	Process humidity sensor breakdown
	70	Developing unit improper cartridge detection (Black)
	71	Developing unit improper cartridge detection (Cyan)
	72	Developing unit improper cartridge detection (Magenta)
	73	Developing unit improper cartridge detection (Yellow)
	74	Developing unit CRUM trouble (Black)
	75	Developing unit CRUM trouble (Cyan)
	76	Developing unit CRUM trouble (Magenta)
	77	Developing unit CRUM trouble (Yellow)
	78	Trouble of image density sensor for registration (Transfer belt surface reflection ratio abnormality)
F3	12	Cassette 1 lift up trouble
F9	00	ICU-PRT communication trouble (ICU detection)
	01	PRT DRAM trouble
	03	NIC port check error
	20	HDD trouble (PRT controller detection)
H2	00	Thermistor open (HL1)
	01	Thermistor open (HL2)
H3	00	Fusing section high temperature trouble (HL1)
	01	Fusing section high temperature trouble (HL2)
H4	00	Fusing section low temperature trouble (HL1)
	01	Fusing section low temperature trouble (HL2)
H5	01	Five continuous detections of POD1 not-reached jam
L4	02	Paper feed motor lock trouble
	06	Transfer belt lift motor trouble
	07	Transfer belt motor trouble
	11	Shift motor trouble
L8	01	Full wave signal not provided
	02	Full wave signal width abnormality
	04	Main power switch abnormality detection
PF	00	RIC copy inhibit signal reception
U1	02	RTC read trouble
U2	00	EEPROM read/write error (ICU detection)
	11	EEPROM check sum error (ICU detection)
	30	Production No. data discrepancy (ICU ⇔ ICU)
	90	EEPROM read/write error (PCU detection)
	91	EEPROM check sum error (PCU detection)
U4	02	ADU alignment plate operation abnormality
U6	00	Desk communication trouble
	01	Desk tray 1 lift motor trouble
	02	Desk tray 2 lift motor trouble
	03	Desk tray 3 lift motor trouble
	09	LCC lift motor trouble
	10	Desk transport motor trouble
	20	LCC communication trouble
	21	LCC transport motor trouble
	22	LCC 24V power abnormality
U7	00	RIC communication trouble

6. Details

Main code	Sub code	Title	Image density sensor error/ Transfer charger error (Black)	
C2	10	Display	Lamp/Message	
		Phenomenon	Detail	Black image density sensor trouble /Transfer trouble (Black) /The deference between the transfer belt surface detection level and the black toner patch density detection level is normal. (Judged in black image density sensor calibration)
			Section	Transfer
		Case 1	Cause	Black image density sensor trouble
			Check & Remedy	Black density image sensor cleaning, replacement
		Case 2	Cause	Transfer voltage trouble
			Check & Remedy	Check and adjust the transfer voltage.
		Case 3	Cause	High voltage PWB trouble
			Check & Remedy	Replace the high voltage PWB.
		Case 4	Cause	Transfer unit trouble
			Check & Remedy	Check the transfer belt surface for dirt and scratches. Replace the transfer belt, replace the cleaning blade, replace the transfer unit.
		Case 5	Cause	PCU PWB trouble
			Check & Remedy	PCU PWB replacement
		Case 6	Cause	Photoconductor unit trouble
			Check & Remedy	Replace the photoconductor unit.
		Case 7	Cause	Developing unit trouble
			Check & Remedy	Replace the developing unit
		Case 8	Cause	Connector, harness trouble (PCU PWB, high voltage PWB, image density sensor, photoconductor unit, transfer unit, developing unit)
			Check & Remedy	Check contact. Replace the harness. Replace the PWB.

Main code	Sub code	Title	Image data memory trouble	
E7	01	Display	Lamp/Message	
		Phenomenon	Detail	The ICU image data memory (SDRAM) cannot be detected as 256MB or more. The required SDRAM capacity for the model is not provided.
			Section	ICU PWB
		Case 1	Cause	The SDRAM of ICU PWB is not installed. The SDRAM of ICU PWB is improperly installed.
			Check & Remedy	Check installation of the SDRAM of ICU ASIC PWB.
		Case 2	Cause	The SDRAM of ICU PWB does not operate properly.
			Check & Remedy	Use SIM 60-01 to check the capacity of the SDRAM. Replace the SDRAM of ICU PWB.
		Case 3	Cause	ICU PWB abnormality
			Check & Remedy	Replace the ICU PWB.

Main code	Sub code	Title	ICU gate array abnormality	
E7	07	Display	Lamp/Message	
		Phenomenon	Detail	An abnormality occurs in the ICU gate array.
			Section	ICU PWB
		Case 1	Cause	ICU PWB abnormality
			Check & Remedy	Replace the ICU PWB.
		Case 2	Cause	Defective gate array (ASIC, FPGA) on the ICU PWB.
			Check & Remedy	Replace the gate array on the ICU PWB.

Main code	Sub code	Title	LED controller initial trouble (Black)	
E7	20	Display	Lamp/Message	
		Phenomenon	Detail	The initial process of the LED controller cannot be completed properly.
			Section	LED/ICU PWB
		Case 1	Cause	Disconnection of the LED head connector.
			Check & Remedy	Check connection of the LED head connector.
		Case 2	Cause	Disconnection of the harness inside the LED unit.
			Check & Remedy	Replace the LED unit.
		Case 3	Cause	ICU PWB abnormality
			Check & Remedy	Replace the ICU PWB.

Main code	Sub code	Title	LED controller initial trouble (Cyan)	
E7	21	Display	Lamp/Message	
		Phenomenon	Detail	The initial process of the LED controller cannot be completed properly.
			Section	LED/ICU PWB
		Case 1	Cause	Disconnection of the LED head connector.
			Check & Remedy	Check connection of the LED head connector
		Case 2	Cause	Disconnection of the harness inside the LED head.
			Check & Remedy	Replace the LED head unit.
		Case 3	Cause	ICU PWB abnormality
			Check & Remedy	Replace the ICU PWB.

Main code	Sub code	Title	LED controller initial trouble (Magenta)	
E7	22	Display	Lamp/Message	
		Phenomenon	Detail	The initial process of the LED controller cannot be completed properly.
			Section	LED/ICU PWB
		Case 1	Cause	Disconnection of the LED head connector.
			Check & Remedy	Check connection of the LED head connector
		Case 2	Cause	Disconnection of the harness inside the LED head.
			Check & Remedy	Replace the LED head unit.
		Case 3	Cause	ICU PWB abnormality
			Check & Remedy	Replace the ICU PWB.

Main code	Sub code	Title	LED controller initial trouble (Yellow)	
E7	23	Display	Lamp/Message	
		Phenomenon	Detail	The initial process of the LED controller cannot be completed properly.
			Section	LED/ICU PWB
		Case 1	Cause	Disconnection of the LED head connector
			Check & Remedy	Check connection of the LED head connector.
		Case 2	Cause	Disconnection of the harness inside the LED head.
			Check & Remedy	Replace the LED head unit.
		Case 3	Cause	ICU PWB abnormality
			Check & Remedy	Replace the ICU PWB.

Main code	Sub code	Title	LED controller output trouble (Black)	
E7	24	Display	Lamp/Message	
		Phenomenon	Detail	When printing, the print end signal for each page is not properly provided.
			Section	LED/ICU PWB
		Case 1	Cause	Disconnection of the LED head connector.
			Check & Remedy	Check connection of the LED head connector.
		Case 2	Cause	Disconnection of the harness inside the LED head.
			Check & Remedy	Replace the LED head unit.
		Case 3	Cause	ICU PWB abnormality
			Check & Remedy	Replace the ICU PWB.

Main code	Sub code	Title	LED controller output trouble (Cyan)	
E7	25	Display	Lamp/Message	
		Phenomenon	Detail	When printing, the print end signal for each page is not properly provided.
			Section	LED/ICU PWB
		Case 1	Cause	Disconnection of the LED head connector.
			Check & Remedy	Check connection of the LED head connector.
		Case 2	Cause	Disconnection of the harness inside the LED head.
			Check & Remedy	Replace the LED head unit.
		Case 3	Cause	ICU PWB abnormality
			Check & Remedy	Replace the ICU PWB.

Main code	Sub code	Title	LED controller output trouble (Magenta)	
E7	26	Display	Lamp/Message	
		Phenomenon	Detail	When printing, the print end signal for each page is not properly provided.
			Section	LED/ICU PWB
		Case 1	Cause	Disconnection of the LED head connector.
			Check & Remedy	Check connection of the LED head connector.
		Case 2	Cause	Disconnection of the harness inside the LED head.
			Check & Remedy	Replace the LED head unit.
		Case 3	Cause	ICU PWB abnormality
			Check & Remedy	Replace the ICU PWB.

Main code	Sub code	Title	LED controller output trouble (Yellow)	
E7	27	Display	Lamp/Message	
		Phenomenon	Detail	When printing, the print end signal for each page is not properly provided.
			Section	LED/ICU PWB
		Case 1	Cause	Disconnection of the LED head connector
			Check & Remedy	Check connection of the LED head connector.
		Case 2	Cause	Disconnection of the harness inside the LED head.
			Check & Remedy	Replace the LED head unit
		Case 3	Cause	ICU PWB abnormality
			Check & Remedy	Replace the ICU PWB.

Main code	Sub code	Title	LED control ASIC connection abnormality	
E7	28	Display	Lamp/Message	
		Phenomenon	Detail	Access error between the PCU PWB CPU and the LED control ASIC
			Section	ICU/PCU PWB
		Case 1	Cause	Disconnection of the ICU/ PCU PWB communication connector
			Check & Remedy	Check connection of the ICU/PCU PWB communication connector
		Case 2	Cause	ICU/PCU PWB communication harness trouble.
			Check & Remedy	Check the ICU/PCU PWB communication harness.
		Case 3	Cause	ICU PWB/PCU PWB trouble
			Check & Remedy	Check grounding of the machine. Replace the ICU PWB or the PCU PWB.

Main code	Sub code	Title	Color correction data write error	
E7	40	Display	Lamp/Message	
		Phenomenon	Detail	Data write error to the Nand-Flash for holding color correction data
			Section	MFP PWB
		Case 1	Cause	Color correction data rewrite error
			Check & Remedy	Perform rewriting of color correction data again.
		Case 2	Cause	MFP PWB trouble
			Check & Remedy	Replace the MFP PWB.

Main code	Sub code	Title	Color correction data transfer abnormality	
E7	41	Display	Lamp/Message	
		Phenomenon	Detail	Data transfer error from the Nand-Flash for holding color correction data to the FC-RAM for holding color correction image process
			Section	MFP PWB
		Case 1	Cause	MFP PWB trouble
			Check & Remedy	Replace the MFP PWB.

Main code	Sub code	Title	ICU-PCU communication trouble (ICU detection)	
E7	90	Display	Lamp/Message	
		Phenomenon	Detail	Communication establishment error, framing, parity, protocol error
			Section	ICU/PCU PWB
		Case 1	Cause	Disconnection of the ICU/ PCU PWB scanner communication connector. Defective harness of the ICU PWB and the PCU PWB.
			Check & Remedy	Check connection of the ICU PWB and the PCU PWB. Check the harness.
		Case 2	Cause	ICU/PCU PWB trouble
			Check & Remedy	Check grounding of the machine. Replace the ICU PWB or the PCU PWB.

Main code	Sub code	Title	Finisher communication trouble (Machine detection)	
F1	00	Display	Lamp/Message	
		Phenomenon	Detail	Communication line test error when turning on the power or after canceling the exclusive simulation. Communication error with the finisher.
			Section	PCU PWB and finisher
		Case 1	Cause	Disconnection of the PCU-finisher connector, defective contact or disconnection of the harness.
			Check & Remedy	Check the connector and the harness of the communication line.
		Case 2	Cause	Finisher control PWB trouble
			Check & Remedy	Replace the finisher control PWB.
		Case 3	Cause	Control PWB (PCU) trouble
			Check & Remedy	Replace the PCU PWB.
		Case 4	Cause	Malfunctions by noises
			Check & Remedy	—
		Common	Cancel method	Can be canceled by turning OFF/ON the power.

Main code	Sub code	Title	Finisher transport motor trouble (Finisher detection)	
F1	02	Display	Lamp/Message	
		Phenomenon	Detail	Transport motor drive trouble
			Section	Transport
		Case 1	Cause	Motor lock
			Check & Remedy	Use SIM 3-3 to check the transport motor operation.
		Case 2	Cause	Motor RPM abnormality
			Check & Remedy	Same as Case 1.
		Case 3	Cause	Over current to the motor
			Check & Remedy	Same as Case 1.
		Case 4	Cause	Console finisher control PWB trouble
			Check & Remedy	Same as Case 1.

Main code	Sub code	Title	Finisher paddle motor trouble	
F1	03	Display	Lamp/Message	
		Phenomenon	Detail	Paddle motor operation trouble
			Section	Finisher
		Case 1	Cause	Motor lock
			Check & Remedy	Use SIM 3-3 to check the motor operation.
		Case 2	Cause	Motor RPM abnormality
			Check & Remedy	Same as Case 1.
		Case 3	Cause	Over current to the motor
			Check & Remedy	Same as Case 1.
		Case 4	Cause	Console finisher control PWB trouble
			Check & Remedy	Same as Case 1.

Main code	Sub code	Title	Finisher slide motor trouble	
F1	06	Display	Lamp/Message	
		Phenomenon	Detail	Slide motor operation trouble
			Section	Finisher
		Case 1	Cause	Motor lock
			Check & Remedy	Use SIM 3-3 to check the motor operation.
		Case 2	Cause	Motor RPM abnormality
			Check & Remedy	Same as Case 1.
		Case 3	Cause	Over current to the motor
			Check & Remedy	Same as Case 1.
		Case 4	Cause	Console finisher control PWB trouble
			Check & Remedy	Same as Case 1.

Main code	Sub code	Title	Finisher staple motor trouble (Finisher detection)	
F1	10	Display	Lamp/Message	
		Phenomenon	Detail	Stapling operation trouble
			Section	Finisher
		Case 1	Cause	Motor lock
			Check & Remedy	Use SIM 3-3 to check the staple motor operation.
		Case 2	Cause	Motor RPM abnormality
			Check & Remedy	Same as Case 1.
		Case 3	Cause	Over current to the motor
			Check & Remedy	Same as Case 1.
		Case 4	Cause	Console finisher control PWB trouble
			Check & Remedy	Same as Case 1.

Main code	Sub code	Title	Finisher bundle process motor trouble (Finisher detection)	
F1	11	Display	Lamp/Message	
		Phenomenon	Detail	Bundle process motor trouble
			Section	Finisher
		Case 1	Cause	Motor lock
			Check & Remedy	Use SIM 3-3 to check the staple motor operation.
		Case 2	Cause	Motor RPM abnormality
			Check & Remedy	Same as Case 1.
		Case 3	Cause	Over current to the motor
			Check & Remedy	Same as Case 1.
		Case 4	Cause	Console finisher control PWB trouble
			Check & Remedy	Same as Case 1.

Main code	Sub code	Title	Finisher tray lift motor trouble (Finisher detection)	
F1	15	Display	Lamp/Message	
		Phenomenon	Detail	Lift motor trouble
			Section	Finisher
		Case 1	Cause	Motor lock
			Check & Remedy	Use SIM 3-3 to check the staple motor operation.
		Case 2	Cause	Motor RPM abnormality
			Check & Remedy	Same as Case 1.
		Case 3	Cause	Over current to the motor
			Check & Remedy	Same as Case 1.
		Case 4	Cause	Console finisher control PWB trouble
			Check & Remedy	Same as Case 1.

Main code	Sub code	Title	Finisher front alignment motor trouble (Finisher detection)	
F1	19	Display	Lamp/Message	
		Phenomenon	Detail	Front alignment motor trouble
			Section	Finisher
		Case 1	Cause	Motor lock
			Check & Remedy	Use SIM 3-3 to check the staple motor operation.
		Case 2	Cause	Motor RPM abnormality
			Check & Remedy	Same as Case 1.
		Case 3	Cause	Over current to the motor
			Check & Remedy	Same as Case 1.
		Case 4	Cause	Console finisher control PWB trouble
			Check & Remedy	Same as Case 1.

Main code	Sub code	Title	Finisher rear alignment motor trouble (Finisher detection)	
F1	20	Display	Lamp/Message	
		Phenomenon	Detail	Rear alignment motor trouble
			Section	Finisher
		Case 1	Cause	Motor lock
			Check & Remedy	Use SIM 3-3 to check the staple motor operation.
		Case 2	Cause	Motor RPM abnormality
			Check & Remedy	Same as Case 1.
		Case 3	Cause	Over current to the motor
			Check & Remedy	Same as Case 1.
		Case 4	Cause	Console finisher control PWB trouble
			Check & Remedy	Same as Case 1.

Main code	Sub code	Title	Finisher fold sensor trouble	
F1	31	Display	Lamp/Message	
		Phenomenon	Detail	Sensor input value abnormality
			Section	Finisher
		Case 1	Cause	Sensor breakage
			Check & Remedy	Use SIM 3-2 to check the sensor operation.
		Case 2	Cause	Harness disconnection
			Check & Remedy	Same as case 1.
		Case 3	Cause	Console finisher control PWB trouble
			Check & Remedy	Same as Case 1.

Main code	Sub code	Title	Finisher punch unit communication trouble	
F1	32	Display	Lamp/Message	
		Phenomenon	Detail	Communication error between the console finisher and the punch unit
			Section	Finisher
		Case 1	Cause	Improper connection or disconnection of the connector and the harness of the console finisher and the punch unit.
			Check & Remedy	Check the connector and the harness of the communication line.
		Case 2	Cause	Control PWB (PCU) trouble
			Check & Remedy	Replace the PCU PWB.
		Case 3	Cause	Console finisher control PWB trouble
			Check & Remedy	Replace the console finisher control PWB.
		Case 4	Cause	Malfunction by noises
			Check & Remedy	
		Common	Cancel method	Can be canceled by turning OFF/ON the power.

Main code	Sub code	Title	Finisher punch side registration motor trouble	
F1	33	Display	Lamp/Message	
		Phenomenon	Detail	Punch side registration motor operation trouble
			Section	Finisher
		Case 1	Cause	Motor lock
			Check & Remedy	Use SIM 3-3 to check the staple motor operation.
		Case 2	Cause	Motor RPM abnormality
			Check & Remedy	Same as Case 1.
		Case 3	Cause	Over current to the motor
			Check & Remedy	Same as Case 1.
		Case 4	Cause	Console finisher control PWB trouble
			Check & Remedy	Same as Case 1.

Main code	Sub code	Title	Finisher punch motor trouble	
F1	34	Display	Lamp/Message	
		Phenomenon	Detail	Punch motor operation trouble
			Section	Finisher
		Case 1	Cause	Motor lock
			Check & Remedy	Use SIM 3-3 to check the staple motor operation.
		Case 2	Cause	Motor RPM abnormality
			Check & Remedy	Same as Case 1.
		Case 3	Cause	Over current to the motor
			Check & Remedy	Same as Case 1.
		Case 4	Cause	Console finisher control PWB trouble
			Check & Remedy	Same as Case 1.

Main code	Sub code	Title	Finisher punch side registration sensor trouble	
F1	35	Display	Lamp/Message	
		Phenomenon	Detail	Sensor input value abnormality
			Section	Finisher
		Case 1	Cause	Sensor breakage
			Check & Remedy	Use SIM 3-2 to check the sensor operation.
		Case 2	Cause	Harness disconnection
			Check & Remedy	Same as case 1.
		Case 3	Cause	Console finisher control PWB trouble
			Check & Remedy	Same as Case 1.

Main code	Sub code	Title	Finisher punch registration sensor trouble	
F1	36	Display	Lamp/Message	
		Phenomenon	Detail	Sensor input value abnormality
			Section	Finisher
		Case 1	Cause	Sensor breakage
			Check & Remedy	Use SIM 3-2 to check the sensor operation.
		Case 2	Cause	Harness disconnection
			Check & Remedy	Same as case 1.
		Case 3	Cause	Console finisher control PWB trouble
			Check & Remedy	Same as Case 1.

Main code	Sub code	Title	Finisher/sorter backup RAM trouble	
F1	37	Display	Lamp/Message	
		Phenomenon	Detail	Writing to the backup RAM is started but not completed in 250msec. When writing to the backup RAM, if the write data do not coincide with the read data, writing is performed again. However, the write data still do not coincide with the read data.
			Section	Finisher/sorter
		Case 1	Cause	Console finisher control PWB, backup RAM trouble
			Check & Remedy	Replace the console finisher control PWB.
		Case 2	Cause	Console finisher control PWB trouble
			Check & Remedy	Same as Case 1.
		Case 3	Cause	Sorter control PWB, backup RAM trouble
			Check & Remedy	Replace the sorter control PWB, and perform the bin paper sensor sensitivity adjustment and the guide bar motor oscillation range adjustment.
		Case 4	Cause	Sorter control PWB trouble
			Check & Remedy	Same as Case 3.
		Case 5	Cause	Malfunction caused by noises
			Check & Remedy	Turn off the machine power, and turn it on again.

Main code	Sub code	Title	Finisher punch backup RAM trouble	
F1	38	Display	Lamp/Message	
		Phenomenon	Detail	Abnormal transformation of punch unit backup RAM contents
			Section	Finisher
		Case 1	Cause	Punch control PWB trouble
			Check & Remedy	Replace the punch control PWB.
		Case 2	Cause	Malfunction caused by noises
			Check & Remedy	

Main code	Sub code	Title	Finisher punch dust sensor trouble	
F1	39	Display	Lamp/Message	
		Phenomenon	Detail	Punch dust sensor detection trouble
			Section	Finisher
		Case 1	Cause	Sensor breakage
			Check & Remedy	Use SIM 3-2 to check the sensor operation.
		Case 2	Cause	Harness disconnection
			Check & Remedy	Same as Case 1.
		Case 3	Cause	Console finisher control PWB trouble
			Check & Remedy	Same as Case 1.

Main code	Sub code	Title	Finisher punch power disconnection trouble	
F1	40	Display	Lamp/Message	
		Phenomenon	Detail	The power disconnection of the punch unit is detected.
			Section	Finisher
		Case 1	Cause	Harness disconnection
			Check & Remedy	Use SIM 3-3 to check the punching operation.
		Case 2	Cause	Punch control PWB trouble
			Check & Remedy	Same as Case 1.

Main code	Sub code	Title	Guide bar oscillation motor (M3) lock	
F1	83	Display	Lamp/Message	
		Phenomenon	Detail	Returning to the home position is not completed in 2sec. When moving from the home position, the home position sensor does not turn off after outputting 20 pulses of the motor drive signal.
			Section	Sorter
		Common	Check	Execute SIM 3-2 and 3-3 to check the guide bar drive motor operations and the sensor operations.
		Case 1	Cause	Guide bar home position sensor trouble
			Check & Remedy	Replace the guide bar home position sensor.
		Case 2	Cause	Cable trouble between the guide bar oscillation motor and the sorter controller PWB.
			Check & Remedy	Check and connect the cable properly between the guide bar oscillation motor and the sorter controller PWB.
		Case 3	Cause	The circuit breaker (CB1) is operating.
			Check & Remedy	Remove the cause for operation of the circuit breaker, and reset the circuit breaker.
		Case 4	Cause	There is a mechanical bur in the guide bar shifting path.
			Check & Remedy	Repair the mechanism to remove the bur.
		Case 5	Cause	Guide bar oscillating motor (M3) trouble
			Check & Remedy	Replace the sorter controller PWB, and perform the bin paper sensor sensitivity adjustment and the guide bar motor oscillating range adjustment.
		Case 6	Cause	Sorter controller PWB trouble
			Check & Remedy	Same as Case 5

Main code	Sub code	Title	Bin shift motor (M1) lock	
F1	89	Display	Lamp/Message	
		Phenomenon	Detail	The bin shift motor operation is not completed in 4 times greater than the specified time. When driving the bin shift motor, the signal from the shift motor clock sensor is not detected in 250msec. Shifting to the home position is not completed in 30sec.
			Section	Sorter
		Common	Check	Execute SIM 3-2 and 3-3 to check the guide bar drive motor operations and the sensor operations. (Case 1, 2) Check the voltage (about 24V) between J8-1 and J8-2 on the bin shift motor driver PWB at the timing of the bin shift motor. (Case 3 to 5)
		Case 1	Cause	Cable trouble between the bin shift motor and the sorter controller PWB.
			Check & Remedy	Check and connect the cable properly between the bin shift motor and the sorter controller PWB.
		Case 2	Cause	The circuit breaker (CB1) is operating.
			Check & Remedy	Remove the cause for operation of the circuit breaker, and reset the circuit breaker.
		Case 3	Cause	Wiring trouble of the bin shift motor (M1).
			Check & Remedy	Correct wiring of the bin shift motor.
		Case 4	Cause	Bin shift motor trouble
			Check & Remedy	Replace the bin shift motor.
		Case 5	Cause	Sorter controller PWB trouble
			Check & Remedy	Replace the sorter controller PWB, and perform the bin paper sensor sensitivity adjustment and the guide bar motor oscillating range adjustment.
		Case 6	Cause	Bin shift mechanism trouble
			Check & Remedy	Repair the mechanism.

Main code	Sub code	Title	Bin paper sensor automatic adjustment trouble	
F1	91	Display	Lamp/Message	
		Phenomenon	Detail	Sensor output abnormality when adjusting the sensor detection level.
			Section	Sorter
		Common	Check	Execute SIM 3-2 to check the sensor output.
		Case 1	Cause	Cable trouble between the sorter controller PWB and the bin unit.
			Check & Remedy	Check and connect the cable properly between the sorter controller PWB and the bin unit.
		Case 2	Cause	Cable trouble on the light emitting side (S1) and the light receiving side (S2) of the bin paper sensor.
			Check & Remedy	Check and connect the cable properly on the light emitting side (S1) and the light receiving side (S2) of the bin paper sensor.
		Case 3	Cause	Improper installation on the light emitting side (S1) and the light receiving side (S2) of the bin paper sensor.
			Check & Remedy	Install the light emitting side (S1) and the light receiving side (S2) of the bin paper sensor of the bin paper sensor, and perform the bin paper sensor sensitivity adjustment.
		Case 4	Cause	Bin paper sensor light emitting side (S1) and light receiving side (S2) trouble
			Check & Remedy	Replace the bin paper sensor light emitting side (S1) and light receiving side (S2), and perform the bin paper sensor sensitivity adjustment.

Main code	Sub code	Title	Process thermistor breakdown	
F2	39	Display	Lamp/Message	
		Phenomenon	Detail	Process thermistor open
			Section	Drum cartridge
		Case 1	Cause	Process thermistor trouble
			Check & Remedy	Replace the process thermistor.
		Case 2	Cause	Disconnection of the process thermistor harness.
			Check & Remedy	Check connection of the connector and the harness of the process thermistor.
		Case 3	Cause	PCU PWB trouble
			Check & Remedy	Replace the PCU PWB.

Main code	Sub code	Title	Toner empty sensor abnormality (Black)	
F2	40	Display	Lamp/Message	
		Phenomenon	Detail	Toner empty sensor output abnormality
			Section	Cartridge
		Case 1	Cause	Connector harness trouble, connector disconnection
			Check & Remedy	1. Check connection of the toner empty sensor. → Connect it properly. 2. Check connection of the connector harness to the PCU PWB. → Connect it properly. 3. Check connection of the cartridge. → Connect it properly. 4. Check for disconnection of the harness. → Replace the harness.
		Case 2	Cause	Cartridge trouble
			Check & Remedy	Replace the cartridge.

Main code	Sub code	Title	Toner empty sensor abnormality (Cyan)	
F2	41	Display	Lamp/Message	
		Phenomenon	Detail	Toner empty sensor output abnormality
			Section	Cartridge
		Case 1	Cause	Connector harness trouble, connector disconnection
			Check & Remedy	1. Check connection of the toner empty sensor. → Connect it properly. 2. Check connection of the connector harness to the PCU PWB. → Connect it properly. 3. Check connection of the cartridge. → Connect it properly. 4. Check for disconnection of the harness. → Replace the harness.
		Case 2	Cause	Cartridge trouble
			Check & Remedy	Replace the cartridge.

Main code	Sub code	Title	Toner empty sensor abnormality (Magenta)	
F2	42	Display	Lamp/Message	
		Phenomenon	Detail	Toner empty sensor output abnormality
			Section	Cartridge
		Case 1	Cause	Connector harness trouble, connector disconnection
			Check & Remedy	1. Check connection of the toner empty sensor. → Connect it properly. 2. Check connection of the connector harness to the PCU PWB. → Connect it properly. 3. Check connection of the cartridge. → Connect it properly. 4. Check for disconnection of the harness. → Replace the harness.
		Case 2	Cause	Cartridge trouble
			Check & Remedy	Replace the cartridge.

Main code	Sub code	Title	Toner empty sensor abnormality (Yellow)	
F2	43	Display	Lamp/Message	
		Phenomenon	Detail	Toner empty sensor output abnormality
			Section	Cartridge
		Case 1	Cause	Connector harness trouble, connector disconnection
			Check & Remedy	1. Check connection of the toner empty sensor. → Connect it properly. 2. Check connection of the connector harness to the PCU PWB. → Connect it properly. 3. Check connection of the cartridge. → Connect it properly. 4. Check for disconnection of the harness. → Replace the harness.
		Case 2	Cause	Cartridge trouble
			Check & Remedy	Replace the cartridge.

Main code	Sub code	Title	Black image density sensor trouble (Transfer belt surface reflection ratio abnormality)	
F2	44	Display	Lamp/Message	
		Phenomenon	Detail	Before starting process control, the transfer belt surface is scanned with the image density sensor to adjust the sensor gain so that the output becomes a fixed value. However, when the sensor gain is changed, the output is not within the specified range.
			Section	
		Common	Check	Use SIM 44-2 to adjust the process control sensor gain.
		Case 1	Cause	When "Error" occurs in SIM 44-2: 1. Dirt/defect of the image density sensor 2. Disconnection of the harness between the PCU PWB and the image density sensor 3. Calibration plate solenoid operation trouble
			Check & Remedy	1. Clean/replace the image density sensor. 2. Connect/replace the harness between the PCU PWB and the image density sensor. 3. Replace the calibration plate solenoid.
		Case 2	Cause	When SIM 44-2 is completed: 1. Insufficient cleaning of the transfer belt.
			Check & Remedy	1. Check the transfer belt surface.

Main code	Sub code	Title	Color image density sensor trouble (Calibration plate surface reflection ratio abnormality)	
F2	45	Display	Lamp/Message	
		Phenomenon	Detail	Before starting process control, the calibration plate surface is scanned with the image density sensor to adjust the sensor gain so that the output becomes a fixed value. However, when the sensor gain is changed, the output is not within the specified range.
			Section	—
		Common	Check	Use SIM 44-2 to adjust the process control sensor gain.
		Case 1	Cause	When "Error" occurs in SIM 44-2: 1. Dirt/defect of the image density sensor 2. Disconnection of the harness between the PCU PWB and the image density sensor
			Check & Remedy	1. Clean/replace the image density sensor. 2. Connect/replace the harness between the PCU PWB and the image density sensor.
		Case 2	Cause	When SIM 44-2 is completed: 1. Dirt on the calibration plate, calibration plate solenoid operation trouble
			Check & Remedy	1. Clean the calibration plate. Replace the calibration plate solenoid.

Main code	Sub code	Title	Process humidity sensor breakdown	
F2	58	Display	Lamp/Message	
		Phenomenon	Detail	Process humidity sensor open
			Section	Process
		Case 1	Cause	Process humidity sensor harness disconnection
			Check & Remedy	Check connection of the process humidity sensor harness.
		Case 2	Cause	Process humidity sensor trouble
			Check & Remedy	Replace the process humidity sensor.
		Case 3	Cause	PCU PWB trouble
			Check & Remedy	Replace the PCU PWB.

Main code	Sub code	Title	Developing unit improper cartridge detection (Black)	
F2	70	Display	Lamp/Message	
		Phenomenon	Detail	When detecting the normal CRUM of the cartridge, improper data are detected in the CRUM contents.
			Section	Developing
		Case 1	Cause	Insertion of an improper cartridge. Developing unit trouble
			Check & Remedy	Replace the developing unit.

Main code	Sub code	Title	Developing unit improper cartridge detection (Cyan)	
F2	71	Display	Lamp/Message	
		Phenomenon	Detail	When detecting the normal CRUM of the cartridge, improper data are detected in the CRUM contents.
			Section	Developing
		Case 1	Cause	Insertion of an improper cartridge. Developing unit trouble
			Check & Remedy	Replace the developing unit.

Main code	Sub code	Title	Developing unit improper cartridge detection (Magenta)	
F2	72	Display	Lamp/Message	
		Phenomenon	Detail	When detecting the normal CRUM of the cartridge, improper data are detected in the CRUM contents.
			Section	Developing
		Case 1	Cause	Insertion of an improper cartridge. Developing unit trouble
			Check & Remedy	Replace the developing unit.

Main code	Sub code	Title	Developing unit improper cartridge detection (Yellow)	
F2	73	Display	Lamp/Message	
		Phenomenon	Detail	When detecting the normal CRUM of the cartridge, improper data are detected in the CRUM contents.
			Section	Developing
		Case 1	Cause	Insertion of an improper cartridge. Developing unit trouble
			Check & Remedy	Replace the developing unit.

Main code	Sub code	Title	Developing unit CRUM trouble (Black)	
F2	74	Display	Lamp/Message	
		Phenomenon	Detail	CRUM read/write error
			Section	Developing
		Case 1	Cause	Improper connection or disconnection of the connector and the harness between the PCU and the CRUM.
			Check & Remedy	Check the connector and the harness between the PCU and the CRUM.
		Case 2	Cause	Developing unit trouble
			Check & Remedy	Replace the developing unit.
		Case 3	Cause	Control PWB (PCU) trouble
			Check & Remedy	Replace the PCU PWB.

Main code	Sub code	Title	Developing unit CRUM trouble (Cyan)	
F2	75	Display	Lamp/Message	
		Phenomenon	Detail	CRUM read/write error
			Section	Developing
		Case 1	Cause	Improper connection or disconnection of the connector and the harness between the PCU and the CRUM.
			Check & Remedy	Check the connector and the harness between the PCU and the CRUM.
		Case 2	Cause	Developing unit trouble
			Check & Remedy	Replace the developing unit.
		Case 3	Cause	Control PWB (PCU) trouble
			Check & Remedy	Replace the PCU PWB.

Main code	Sub code	Title	Developing unit CRUM trouble (Magenta)	
F2	76	Display	Lamp/Message	
		Phenomenon	Detail	CRUM read/write error
			Section	Developing
		Case 1	Cause	Improper connection or disconnection of the connector and the harness between the PCU and the CRUM.
			Check & Remedy	Check the connector and the harness between the PCU and the CRUM.
		Case 2	Cause	Developing unit trouble
			Check & Remedy	Replace the developing unit.
		Case 3	Cause	Control PWB (PCU) trouble
			Check & Remedy	Replace the PCU PWB.

Main code	Sub code	Title	Developing unit CRUM trouble (Yellow)	
F2	77	Display	Lamp/Message	
		Phenomenon	Detail	CRUM read/write error
			Section	Developing
		Case 1	Cause	Improper connection or disconnection of the connector and the harness between the PCU and the CRUM.
			Check & Remedy	Check the connector and the harness between the PCU and the CRUM.
		Case 2	Cause	Developing unit trouble
			Check & Remedy	Replace the developing unit.
		Case 3	Cause	Control PWB (PCU) trouble
			Check & Remedy	Replace the PCU PWB.

Main code	Sub code	Title	Trouble of image density sensor for registration (Transfer belt surface reflection ratio abnormality)	
F2	78	Display	Lamp/Message	
		Phenomenon	Detail	Before starting registration, the transfer belt surface is scanned with the image density sensor to adjust the sensor gain so that the output becomes a fixed value. However, when the sensor gain is changed, the value is not within the specified range.
			Section	—
		Case 1	Cause	Image density sensor trouble, disconnection of the harness between the PCU PWB and the image density sensor, dirt on the image density sensor.
			Check & Remedy	Check the sensor and the harness.
		Case 2	Cause	Calibration plate solenoid operation trouble
			Check & Remedy	Check the calibration plate solenoid operation.
		Case 3	Cause	Insufficient cleaning of the transfer belt.
			Check & Remedy	Check the transfer belt surface.

Main code	Sub code	Title	Cassette 1 lift-up trouble	
F3	12	Display	Lamp/Message	
		Phenomenon	Detail	LUD1 does not turn on within the specified time.
			Section	—
		Case 1	Cause	LUD1 sensor trouble, disconnection of harness among the PCU PWB, the lift-up unit, and the paper feed unit.
			Check & Remedy	Check LUD1, its harness, and the connector.
		Case 2	Cause	Cassette 1 lift-up motor trouble
			Check & Remedy	Check the lift-up unit.

Main code	Sub code	Title	ICU-PRT communication trouble (ICU detection)	
F9	00	Display	Lamp/Message	
		Phenomenon	Detail	Communication establishment error, framing, parity, protocol error
			Section	—
		Case 1	Cause	Defective connection of the ICU/PRT PWB communication connector, defective harness between the ICU PWB and the PRT PWB, defective ICU PWB/ PRT PWB
			Check & Remedy	Check connection and the harness between the ICU PWB and the MFP PWB. Check the machine earth. Replace the ICU or the PRT PWB.

Main code	Sub code	Title	PRT DRAM trouble	
F9	01	Display	Lamp/Message	
		Phenomenon	Detail	DRAM in the PRT PWB cannot be accessed.
			Section	—
		Case 1	Cause	Defective DRAM, defective installation of the DRAM
			Check & Remedy	Replace the DRAM. Check connection of the DRAM.

Main code	Sub code	Title	NIC port check error	
F9	03	Display	Lamp/Message	
		Phenomenon	Detail	NIC port check error
			Section	—
		Case 1	Cause	Defective connection of the NIC connector, defective NIC PWB, defective PRT PWB
			Check & Remedy	Check the NIC connector again. Replace the HDD. Replace the PRT PWB.

Main code	Sub code	Title	HDD trouble (PRT controller detection)	
F9	20	Display	Lamp/Message	
		Phenomenon	Detail	The HDD (option) does not operate normally in the machine with the HDD.
			Section	—
		Case 1	Cause	Defective connection of the HDD connector, defective HDD, defective PRT PWB
			Check & Remedy	Check the HDD again. Replace the HDD. Replace the PRT PWB.

Main code	Sub code	Title	Thermistor open (HL1)	
H2	00	Display	Lamp/Message	
		Phenomenon	Detail	Thermistor open
			Section	Fusing
		Case 1	Cause	Disconnection of the fusing section connector
			Check & Remedy	Check the connector and the harness between the thermistor and the control PWB.
		Case 2	Cause	The fusing unit is not installed.
			Check & Remedy	Install the fusing unit.
		Case 3	Cause	Thermistor trouble, control PWB trouble, AC power supply trouble
			Check & Remedy	Replace the thermistor or the control PWB. Check the AC power supply.

Main code	Sub code	Title	Thermistor open (HL2)	
H2	01	Display	Lamp/Message	
		Phenomenon	Detail	Thermistor open
			Section	Fusing
		Case 1	Cause	Disconnection of the fusing section connector
			Check & Remedy	Check the connector and the harness between the thermistor and the control PWB.
		Case 2	Cause	The fusing unit is not installed.
			Check & Remedy	Install the fusing unit.
		Case 3	Cause	Thermistor trouble, control PWB trouble, AC power supply trouble
			Check & Remedy	Replace the thermistor or the control PWB. Check the AC power supply.

Main code	Sub code	Title	Fusing section high temperature trouble (THS1)	
H3	00	Display	Lamp/Message	
		Phenomenon	Detail	The fusing temperature exceeds 230°C.
			Section	Fusing
		Common	Check	Use SIM 5-2 to check the heater lamp flashing operation.
		Case 1	Cause	The heater lamp flashes properly with SIM 5-2. Thermistor trouble, disconnection of the fusing section connector
			Check & Remedy	Check the thermistor and its harness. Cancel the error with SIM 14.
		Case 2	Cause	The heater lamp keeps ON with SIM 5-2. Control PWB trouble, AC power supply trouble
			Check & Remedy	Check the AC PWB and the control PWB lamp control circuit. Cancel the error with SIM 14.

Main code	Sub code	Title	Fusing section high temperature trouble (THS2)	
H3	01	Display	Lamp/Message	
		Phenomenon	Detail	The fusing temperature exceeds 230°C.
			Section	Fusing
		Common	Check	Use SIM 5-2 to check the heater lamp flashing operation.
		Case 1	Cause	The heater lamp flashes properly with SIM 5-2. Thermistor trouble, disconnection of the fusing section connector
			Check & Remedy	Check the thermistor and its harness. Cancel the error with SIM 14.
		Case 2	Cause	The heater lamp keeps ON with SIM 5-2. AC power supply trouble, control PWB trouble
			Check & Remedy	Check the AC PWB and the control PWB lamp control circuit. Cancel the error with SIM 14.

Main code	Sub code	Title	Fusing section low temperature trouble (HL1)	
H4	00	Display	Lamp/Message	
		Phenomenon	Detail	The fusing temperature is not reached within the specified time after turning on the power relay.
			Section	Fusing
		Common	Check	Use SIM 5-2 to check the heater lamp flashing operation.
		Case 1	Cause	The heater lamp flashes properly with SIM 5-2. Thermistor trouble, PCU PWB (thermistor input circuit) trouble
			Check & Remedy	Check the thermistor and its harness. Check the PCU PWB thermistor input circuit. Cancel the error with SIM 14.
		Case 2	Cause	The heater lamp keeps ON with SIM 5-2. Heater lamp trouble, thermostat trouble, interlock switch trouble, AC power supply trouble, PCU PWB (lamp control circuit) trouble
			Check & Remedy	Check for disconnection of the heater lamp and the thermostat. Check the interlock switch. Check the AC PWB and the PUC PWB lamp control circuit. Cancel the error with SIM 14.

Main code	Sub code	Title	Fusing section low temperature trouble (HL2)	
H4	01	Display	Lamp/Message	
		Phenomenon	Detail	The fusing temperature is not reached within the specified time after turning on the power relay.
			Section	Fusing
		Common	Check	Use SIM 5-2 to check the heater lamp flashing operation.
		Case 1	Cause	The heater lamp flashes properly with SIM 5-2. Thermistor trouble, PCU PWB (thermistor input circuit) trouble
			Check & Remedy	Check the thermistor and its harness. Check the PCU PWB thermistor input circuit. Cancel the error with SIM 14.
		Case 2	Cause	The heater lamp keeps ON with SIM 5-2. Heater lamp trouble, thermostat trouble, interlock switch trouble, AC power supply trouble, PCU PWB (lamp control circuit) trouble
			Check & Remedy	Check for disconnection of the heater lamp and the thermostat. Check the interlock switch. Check the AC PWB and the PUC PWB lamp control circuit. Cancel the error with SIM 14.

Main code	Sub code	Title	Five continuous detections of POD1 not-reached jam	
H5	01	Display	Lamp/Message	
		Phenomenon	Detail	POD1 not-reached jams are detected for five times continuously.
			Section	Fusing
		Case 1	Cause	A fusing jam is not canceled completely. (Jam paper remains inside the machine.)
			Check & Remedy	Check remaining jam paper (winding). Cancel the error with SIM 14.
		Case 2	Cause	POD1 sensor trouble, or harness disconnection
			Check & Remedy	Check POD1 sensor harness. Cancel the error with SIM 14.
		Case 3	Cause	Improper installation of the fusing unit
			Check & Remedy	Check installation of the fusing unit. Cancel the error with SIM 14.

Main code	Sub code	Title	Paper feed motor lock trouble	
L4	02	Display	Lamp/Message	
		Phenomenon	Detail	In warm-up, or in canceling a jam, the paper feed motor is rotated, and the lock signal is not detected within 1sec.
			Section	Paper feed
		Case 1	Cause	Paper feed motor trouble, disconnection of the harness between the PCU PWB and the paper feed motor, control circuit trouble
			Check & Remedy	Use SIM 6-1 to check the paper feed motor operation. Check the harness and the connector between the PCU PWB and the paper feed motor.

Main code	Sub code	Title	Transfer belt lift motor trouble	
L4	06	Display	Lamp/Message	
		Phenomenon	Detail	When the belt motor lifts up or down, the change in the belt home position sensor characteristics is not detected within the specified time. (When the motor lifts up, the lower limit sensor remains ON after the specified time.) (When the motor lifts down, the lower limit sensor does not turn on after the specified time.)
			Section	Paper feed
		Case 1	Cause	Belt lift motor trouble, disconnection of the harness between the PCU PWB and the belt lift motor, control circuit trouble
			Check & Remedy	Use SIM 6-1 to check the belt lift motor operation. Check the harness and the connector between the PCU PWB and the belt lift motor.

Main code	Sub code	Title	Transfer belt motor trouble	
L4	07	Display	Lamp/Message	
		Phenomenon	Detail	1) Before driving the drum, the calibration plate is opened with the process control BK sensor, and light is emitted with the gain value of 0 and with the light emitting quantity fixed to 120. The average of ten light quantities repeats to be 5 or less for 3 times continuously. 2) Immediately after driving the drum, the calibration plate is opened with the process control BK sensor, and one whole turn of the belt surface is scanned with the gain value of 0 and with the light emitting quantity at the optimum value (120 ~ 50). The difference between the max. value and the min. value of the scanned data is 5 or less.
			Section	Paper feed
		Case 1	Cause	Transfer belt motor connector disconnection, process control sensor connector disconnection, process control BK sensor defect, defective connection of the harness between the PCU PWB and the transfer belt motor, defective control circuit
			Check & Remedy	Check the transfer belt motor operation with SIM25-1. Check the process control sensor operation with SIM44-2. Check the harness and the connector between the PCU PWB and the transfer belt motor.

Main code	Sub code	Title	Shift motor trouble	
L4	11	Display	Lamp/Message	
		Phenomenon	Detail	When initializing the shift motor, the change in the shift motor home position sensor characteristics is not detected within the specified time.
			Section	Paper feed
		Case 1	Cause	Shift motor trouble, disconnection of the harness between the PCU PWB and the shift motor, control circuit trouble
			Check & Remedy	Use SIM 6-1 to check the shift motor operation. Use SIM 30-1 to check the shift motor home position sensor. Check the harness and the connector between the PCU PWB and the shift motor.

Main code	Sub code	Title	Full wave signal not provided	
L8	01	Display	Lamp/Message	
		Phenomenon	Detail	The full wave signal is not provided.
			Section	—
		Case 1	Cause	PCU PWB trouble
			Check & Remedy	Replace the PCU PWB.
		Case 2	Cause	Power supply unit trouble
			Check & Remedy	Replace the power supply unit.
		Case 3	Cause	Harness trouble
			Check & Remedy	Check connection of the harness and the connector.

Main code	Sub code	Title	Full wave signal width abnormality	
L8	02	Display	Lamp/Message	
		Phenomenon	Detail	An abnormality of the full wave signal frequency is detected. (The detected frequency is 65kHz or above, or 45kHz or below.)
			Section	—
		Case 1	Cause	PCU PWB trouble
			Check & Remedy	Replace the PCU PWB.
		Case 2	Cause	Power supply unit trouble
			Check & Remedy	Replace the power supply unit.
		Case 3	Cause	Harness trouble
			Check & Remedy	Check connection of the harness and the connector.

Main code	Sub code	Title	Main power switch abnormality detection	
L8	04	Display	Lamp/Message	
		Phenomenon	Detail	Though the PCU program is operating (the power is supplied), the main power switch OFF is detected.
			Section	—
		Case 1	Cause	Main power switch trouble
			Check & Remedy	Replace the main power switch.
		Case 2	Cause	Power supply unit trouble
			Check & Remedy	Replace the power supply unit.
		Case 3	Cause	Harness trouble
			Check & Remedy	Check connection of the harness and the connector.

Main code	Sub code	Title	RIC copy inhibit signal reception	
PF	00	Display	Lamp/Message	
		Phenomenon	Detail	The copy inhibit signal from RIC (host) is received.
			Section	—
		Case 1	Cause	Depends on a judgment by the host.
			Check & Remedy	Make notification to the host. Use SIM 27-1 to ignore.

Main code	Sub code	Title	RTC read trouble	
U1	02	Display	Lamp/Message	
		Phenomenon	Detail	Abnormal value is read from the RTC on the ICU PWB.
			Section	—
		Case 1	Cause	RTC circuit abnormality
			Check & Remedy	Set the time again with the key operation, and check that time advances properly. Check the RTC circuit.

Main code	Sub code	Title	EEPROM read/write error (ICU detection)	
U2	00	Display	Lamp/Message	
		Phenomenon	Detail	EEPROM version error EEPROM write error
			Section	—
		Case 1	Cause	EEPROM trouble. EEPROM is not initialized.
			Check & Remedy	1. Check that the EEPROM is properly set. 2. Use SIM 16 to cancel the error.
		Case 2	Cause	ICU PWB EEPROM access circuit trouble
			Check & Remedy	1. To prevent against deletion of the counter data and the adjustment data, record them with the simulation. (When a printer option is installed, use SIM 22-1 to record the counter data and the adjustment data.) 2. Replace the ICU PWB. 3. Use SIM 16 to cancel the error.

Main code	Sub code	Title	EEPROM check sum error (ICU detection)	
U2	11	Display	Lamp/Message	
		Phenomenon	Detail	EEPROM (ICU) check sum error
			Section	—
		Case 1	Cause	EEPROM trouble
			Check & Remedy	1. Check that the EEPROM is properly set. 2. Use SIM 16 to cancel the error.
		Case 2	Cause	Control circuit freeze by noises. ICU PWB EEPROM access circuit trouble.
			Check & Remedy	1. To prevent against deletion of the counter data and the adjustment data, record them with the simulation. (When a printer option is installed, use SIM 22-1 to record the counter data and the adjustment data.) 2. Replace the ICU PWB. 3. Use SIM 16 to cancel the error.

Main code	Sub code	Title	Production No. data discrepancy	
U2	30	Display	Lamp/Message	
		Phenomenon	Detail	The production No. recorded in the PCU differs from that recorded in the iCU.
			Section	—
		Case 1	Cause	EEPROM is not exchanged when replacing the PCU/ICU PWB.
			Check & Remedy	Check that the EEPROM is properly installed. When replacement, check that the EEPROM before replacement is inserted to the board after replacement.

Main code	Sub code	Title	EEPROM read/write error (PCU)	
U2	90	Display	Lamp/Message	
		Phenomenon	Detail	EEPROM version error EEPROM write error
			Section	—
		Case 1	Cause	EEPROM trouble, Insertion of EEPROM which is not initialized or defective.
			Check & Remedy	1. Check that the EEPROM is properly inserted. 2. Use SIM 16 to cancel the error.
		Case 2	Cause	PCU PWB EEPROM access circuit trouble
			Check & Remedy	1. To prevent against deletion of the counter data and the adjustment data, record them with the simulation. (When a printer option is installed, use SIM 22-1 to record the counter data and the adjustment data.) 2. Replace the PCU PWB. 3. Use SIM 16 to cancel the error.

Main code	Sub code	Title	Adjustment value check sum error (PCU)	
U2	91	Display	Lamp/Message	
		Phenomenon	Detail	EEPROM (PCU) check sum error
			Section	—
		Case 1	Cause	EEPROM trouble
			Check & Remedy	1. Check that the EEPROM is properly inserted. 2. Use SIM 16 to cancel the error.
		Case 2	Cause	Control circuit freeze caused by noises, PCU PWB EEPROM access circuit trouble
			Check & Remedy	1. To prevent against deletion of the counter data and the adjustment data, record them with the simulation. (When a printer option is installed, use SIM 22-1 to record the counter data and the adjustment data.) 2. Replace the PCU PWB. 3. Use SIM 16 to cancel the error.

Main code	Sub code	Title	ADU alignment plate operation abnormality	
U4	02	Display	Lamp/Message	
		Phenomenon	Detail	The alignment plate does not move from the home position within 1sec when it must move. Return to the home position is not detected for 5sec or more.
			Section	ADU
		Case 1	Cause	Home position sensor trouble
			Check & Remedy	Use SIM 9-2 to detect the home position sensor.
		Case 2	Cause	Alignment plate shift motor trouble
			Check & Remedy	Use SIM 9-4 to check the alignment plate operation.
		Case 3	Cause	Disconnection of the harness between the ADU control PWB and the motor sensor.
			Check & Remedy	Check connection of the harness between the ADU control PWB and the motor sensor.
		Case 4	Cause	Alignment plate operation belt, gear breakage or improper adjustment
			Check & Remedy	Remove the ADU, and check for breakage of the gear and the belt.

Main code	Sub code	Title	Desk communication trouble	
U6	00	Display	Lamp/Message	
		Phenomenon	Detail	Desk communication error, communication test error when turning on the power or after canceling the exclusive simulation.
			Section	Desk
		Case 1	Cause	Improper connection or disconnection of the connector and the harness.
			Check & Remedy	Check the connector and the harness in the communication line. Turn OFF/ON the power to cancel the error.
		Case 2	Cause	Desk control PWB trouble, control PWB (PCU) trouble, malfunction caused by noises
			Check & Remedy	Turn OFF/ON the power to cancel the error.

Main code	Sub code	Title	Desk cassette 1 lift-up trouble	
U6	01	Display	Lamp/Message	
		Phenomenon	Detail	DLUD1 does not turn on within the specified time.
			Section	Desk
		Case 1	Cause	DLUD1 sensor trouble, paper feed unit harness disconnection
			Check & Remedy	Check DLUD1 and the harness and the connector.
		Case 2	Cause	Cassette 1 lift-up motor trouble, desk PWB, lift-up unit trouble
			Check & Remedy	Check the lift-up unit.

Main code	Sub code	Title	Desk cassette 2 lift-up trouble	
U6	02	Display	Lamp/Message	
		Phenomenon	Detail	DLUD2 does not turn on within the specified time.
			Section	Desk
		Case 1	Cause	DLUD2 sensor trouble, paper feed unit harness disconnection
			Check & Remedy	Check DLUD2 and the harness and the connector.
		Case 2	Cause	Cassette 2 lift-up motor trouble, desk PWB, lift-up unit trouble
			Check & Remedy	Check the lift-up unit.

Main code	Sub code	Title	Desk cassette 3 lift-up trouble	
U6	03	Display	Lamp/Message	
		Phenomenon	Detail	DLUD3 does not turn on within the specified time.
			Section	Desk
		Case 1	Cause	DLUD3 sensor trouble, paper feed unit harness disconnection
			Check & Remedy	Check DLUD3 and the harness and the connector.
		Case 2	Cause	Cassette 3 lift-up motor trouble, desk PWB, lift-up unit trouble
			Check & Remedy	Check the lift-up unit.

Main code	Sub code	Title	LCC lift motor trouble	
U6	09	Display	Lamp/Message	
		Phenomenon	Detail	The encoder input value does not change in 0.13sec (first time)/0.5sec (second time or later) after rotation of the motor. The motor is rotated for 18sec or more. The encoder changes after the specified time from termination of the motor. (2sec and 10 counts or more)
			Section	LCC
		Case 1	Cause	Defective sensor, defective LCC control PWB, broken gear, defective lift motor
			Check & Remedy	Use SIM 4-2 and 4-3 to check the sensor operation and the lift motor operation. Cancel the trouble with SIM 15.

Main code	Sub code	Title	Desk transport motor trouble	
U6	10	Display	Lamp/Message	
		Phenomenon	Detail	Desk transport motor operation trouble
			Section	—
		Case 1	Cause	Motor lock, motor RPM abnormality, Over current to the motor, console finisher control PWB trouble
			Check & Remedy	Use SIM 3-3 to check the staple motor operation.

Main code	Sub code	Title	LCC communication trouble	
U6	20	Display	Lamp/Message	
		Phenomenon	Detail	Communication error with the LCC. Communication line test error after turning on the power or canceling an exclusive simulation. Discrepancy of the model code between the LCC and the machine.
			Section	LCC
		Case 1	Cause	Defective connection or disconnection of the connector and the harness. Defective LCC control PWB. Defective control PWB (PCU). Malfunction by noises.
			Check & Remedy	Turn off/on the power to cancel the trouble. Check the connector and the harness in the communication line.

Main code	Sub code	Title	LCC transport motor trouble	
U6	21	Display	Lamp/Message	
		Phenomenon	Detail	The encoder input value does not change in 0.06sec after turning on the motor. The encoder input changes after the specified time from turning off the motor. (100 or more counts are made in 0.1sec after 5sec.)
			Section	LCC
		Case 1	Cause	Motor lock. Motor RPM abnormality. An Overcurrent to the motor. Defective LCC control PWB.
			Check & Remedy	Use SIM 4-3 to check the transport motor operation.

Main code	Sub code	Title	LCC 24V power abnormality	
U6	22	Display	Lamp/Message	
		Phenomenon	Detail	DC 24V is not supplied to the LCC.
			Section	LCC
		Case 1	Cause	Defective connection or disconnection of the connector and the harness. Defective LCC control PWB. Defective power unit.
			Check & Remedy	Check the connector and the harness in the power line. Check the voltage of 24V in the power unit and the LCC control PWB.

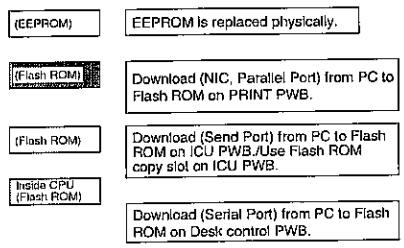
Main code	Sub code	Title	RIC communication trouble	
U7	00	Display	Lamp/Message	
		Phenomenon	Detail	RIC communication error, communication test error when turning on the power or after canceling the exclusive simulation.
			Section	—
		Case 1	Cause	Improper connection or disconnection of the connector and the harness
			Check & Remedy	Check the connector and the harness in the communication line. Turn OFF/ON the power to cancel the error.
		Case 2	Cause	RIC control PWB trouble, control PWB (PCU) trouble, malfunction caused by noises
			Check & Remedy	Turn OFF/ON the power to cancel the error.

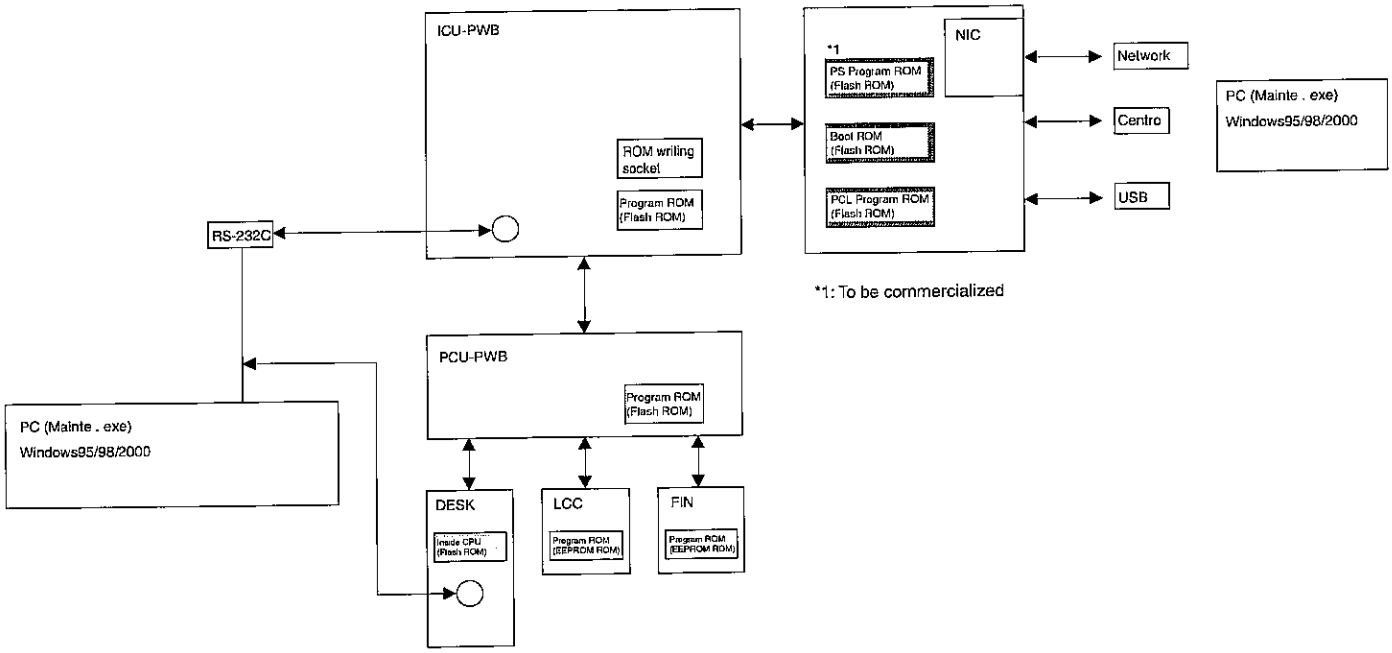
[12] ROM VERSION UP

1. Outline

A. Target ROM for version up

The following ROM's are used in the machine, and their versions are revised.


(EEPROM)
EEPROM is replaced physically.
(Flash ROM)
Download (NIC, Parallel Port) from PC to Flash ROM on PRINT PWB.
(Flash ROM)
Download (Send Port) from PC to Flash ROM on ICU PWB./Use Flash ROM copy slot on ICU PWB.
Inside CPU (Flash ROM)
Download (Serial Port) from PC to Flash ROM on Desk control PWB.



	ROM kind				File name/Content	
Section	Name	Type	Capacity	Replacement	Program (with Copy ROM to ROM program)	Program (without Copy ROM to ROM program)
PCU PWB	PCU ROM	Flash ROM	8Mbit	Replaceable	WPcuXXX_src.pgm	WPcuXXX_d.pgm
ICU PWB	ICU ROM	Flash ROM	32Mbit x 2	Replaceable	WIcuXXX_src.pgm	WIcuXXX_d.pgm
DESK CONTROL PWB	Desk control ROM	Flash ROM included in CPU		Fixed	WDskXXX_src.pgm	WDskXXX_d.pgm
LCC CONTROL PWB	LCC control ROM	EPROM		Replaceable		
FINISHER CONTROL PWB	Finisher control ROM	EPROM		Replaceable		

B. When version up of ROM is required

In the following cases, version up of ROM is required.

1) In order to improve the performance.
2) When installing a new spare part ROM to the machine for repair.
3) When installing a new repair spare parts PWB unit which has a ROM in it to the machine.
4) When the program in a ROM has some troubles and must be corrected.

C. Flash ROM version up method

(In the case of PCU ROM, ICU ROM)

There are following two methods of Flash Rom version up.

1) By connecting a computer with the ICU PWB, the program data of Flash ROM is written from the computer to the Flash ROM on the ICU MAIN PWB.

   This method has the following two variations.

   a) All data in the PWB programs and the Flash ROM copy (ROM-ROM) program are written: (Making of the source ROM)

      In this method, the Flash ROM on the writing side needs capacity of 32Mbit x 2

      (In order to make a source ROM, the capacity of the Flash ROM must be as shown above.)

   b) Only each PWB program is written.

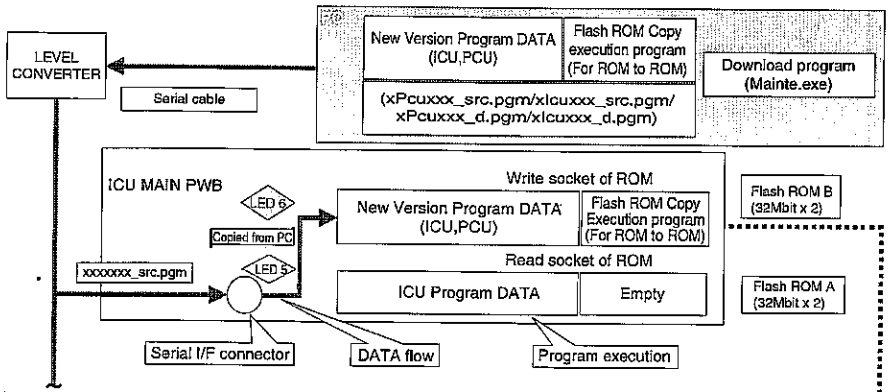
2) Two Flash ROM sockets on the ICU MAIN PWB are used to copy the program in the source ROM to another Flash ROM. (It normally takes 30 to 60 sec.)

   In this method, the Flash ROM (source ROM) made by the method of using a computer and writing the program to the Flash ROM is required.

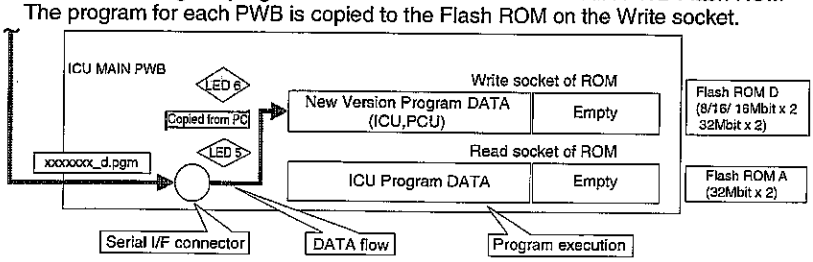
(Note)

To make version up of several Flash ROM's of several machines, it is the most effective to make a source ROM by the method of 1) -a) and copy the data to several Flash ROM's by the method of 2).

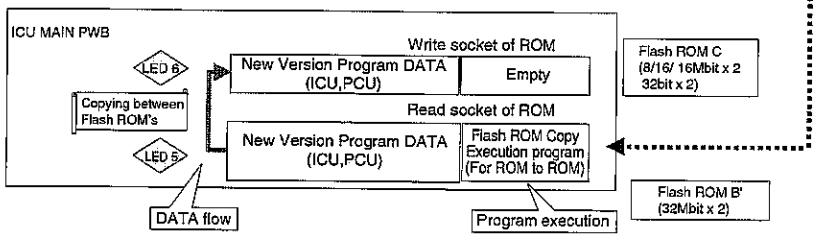
(1)-a Method of writing the program data from a PC to the ICU MAIN PWB Flash ROM (Making of source ROM)
The program for each PWB and the Flash ROM copy program are copied into the Flash ROM on the Write side socket.



(1)-b Method of writing the program data from a PC to the ICU MAIN PWB Flash ROM
The program for each PWB is copied to the Flash ROM on the Write socket.



(2) Method of copying with two Flash ROM sockets on the ICU MAIN PWB
The program for each PWB in the Flash ROM (source ROM) on the Read socket is copied to the Flash ROM (target ROM) on the Write socket.


ICU MAIN PWB
LED 6
Copying between Flash ROM's
LED 5
Write socket of ROM
New Version Program DATA (ICU,PCU)
Empty
Read socket of ROM
New Version Program DATA (ICU,PCU)
Flash ROM Copy Execution program (For ROM to ROM)
Flash ROM C (8/16/ 16Mbit x 2 32bit x 2)
Flash ROM B' (32Mbit x 2)
DATA flow
Program execution

Relationship between copy (write) method and copy contents

(1)-a Method of writing the program data from a PC to the ICU MAIN PWB Flash ROM (Making of source ROM)
The program for each PWB and the Flash ROM copy program are copied into the Flash ROM on the Write side socket.

PC side			Write side Flash Rom (Flash ROM B)				Note
Content		File name	Name	Capacity	Copied content		
Program for PCU Flash ROM	Program for Flash ROM copy (ROM to ROM)	xPcuxxx_src.pgm	For PCU Flash ROM	32bit x 2	Program for PCU Flash ROM	Program for Flash ROM copy (ROM to ROM)	The ICU Flash ROM with the copy (write) program in it must be connected to the Read side Flash ROM socket. When shipping, from the factory, the copy (write) program is provided for use. By this method with two Flash ROM sockets on the ICU PWB, the Flash ROM for copying is made.
Program for ICU Flash ROM	Program for Flash ROM copy (ROM to ROM)	xlcuxxx_src.pgm	For ICU Flash ROM	32bit x 2	Program for ICU Flash ROM	Program for Flash ROM copy (ROM to ROM)	

(1)-b Method of writing the program data from PC to the Flash ROM on the ICU PWB
The program for each PWB is copied to the Flash ROM on the Write socket.

PC side			Write side Flash Rom (Flash ROM D)				Note
Content		File name	Name	Capacity	Copied content		
Program for PCU PWB Flash ROM		xpcuxxx_d.pgm	For PCU Flash ROM	8Mbit	Program for PCU Flash ROM		The ICU MAIN PWB Flash ROM with the copy (write) program in it must be connected to the Read side Flash ROM socket. When shipping, from the factory, the copy (write) program is provided for use.
Program for ICU PWB Flash ROM		xlcuxxx_d.pgm	For ICU Flash ROM	32Mbit x 2	Program for ICU Flash ROM		

(2) Method of copying with two Flash ROM sockets on the ICU MAIN PWB
The program for each PWB in the Flash ROM (Source ROM) on the Read side Flash ROM socket is copied to a Flash ROM on the Write side socket.

Read side Flash ROM (ROM B) (*1)			Write side Flash ROM (Flash ROM C)				Note
Capacity	Content		Name	Capacity	Copied content		
32Mbit x 2	Program for PCU Flash ROM	Program for Flash ROM Copy (ROM to ROM)	For PCU Flash ROM	8Mbit	Program for PCU Flash ROM		The Flash ROM on the Read side is the source ROM for PCU, which was made by writing the program data from PC to the Flash ROM.
32Mbit x 2	Program for ICU Flash ROM	Program for Flash ROM copy (ROM to ROM)	For ICU Flash ROM	32Mbit x 2	Program for ICU Flash ROM		The Flash ROM on the Read side is the source ROM for ICU, which was made by writing the program data from PC to the Flash ROM.

*1: This Flash ROM was made by writing the program data from PC to the ICU MAIN PWB Flash ROM.

NOTE: Besides this method of Flash ROM version up, there is another method by use of a machine of the AR-350/450 series. This method, however, allows the version up work in a shorter time. For details, refer to Technical Report ARE-352 (ARJ-390).

(Desk control ROM)

The desk unit control program is installed in the Flash ROM in the CPU of the desk unit control PWB.

Therefore, this Flash ROM cannot be replaced physically.

The PC is connected with the desk unit control PWB, and the Flash Rom program is written from the PC to the Flash Rom in the CPU.

PC side		Write side (Flash ROM in the CPU on the Desk unit control PWB)
Content	File name	Copied content
Program for Desk control PWB Flash ROM	WDskxxx_d.pgm	Program for Desk control PWB Flash ROM

2. Precautions

A. Relationship between each ROM and version up

When making version up of ROM, check the combination with the version of ROM installed to the other PWB including options.

In some combination of ROM versions, the machine may not operate normally.

If all the ROM's are of the latest versions, there is no problem.

3. Necessary items for version up (copy) of Flash ROM

Necessary items for Flash ROM version up

(In the case of PCU ROM, ICU ROM)

(1)-a Method of writing the program data from a PC to the Flash ROM on the ICU MAIN PWB. (Making of the source ROM)
The program for each PWB and the Flash ROM copy program are copied to a Flash ROM on the Write socket.

Necessary item	Note
Level converter	UKOG-0002QSZZ (with serial cable)/UKOG-0003QSZZ (without serial cable)
PC	Windows 95/98/2000 environment
Download program file	Software to write the program data from a PC to the Flash ROM (Mainte_xxxx.exe)
(PCU MAIN PWB Flash ROM program/Flash ROM copy (ROM to ROM) program) file	xPcuxxx_src.pgm
(ICU MAIN PWB Flash ROM program/Flash ROM copy (ROM to ROM) program) file	xIcuxxx_src.pgm
ICU MAIN PWB Flash ROM (including the program for MAIN ICU PWB and the Flash ROM copy (PC - ROM) program) (32Mbit x 2) (Flash ROM A)	Flash ROM which has the function of writing the program data from PC to the Flash ROM on the ICU
Writing Flash ROM (32Mbit x 2) (Flash ROM B)	Flash ROM to make a source ROM

(1)-b Method of writing the program data from a PC to the ICU MAIN PWB Flash ROM.
The program for each PWB is copied to the Flash ROM on the Write side socket.

Necessary item	Note
Level converter	UKOG-0002QSZZ (with serial cable)/UKOG-0003QSZZ (without serial cable)
PC	Windows 95/98/2000 environment
Download program file	Software for writing the program data from a PC to the Flash ROM (Mainte.exe)
PCU Flash ROM program file	xpcuxxx_d.pgm
ICU Flash ROM program file	xIcuxxx_d.pgm
Flash Rom for ICU (including the program for Main ICU PWB and the Flash ROM copy (PC - ROM) program (32Mbit x 2) (Flash ROM A)	Flash ROM (ICU PWB) having the function to write program data from PC to the Flash ROM on the ICU PWB.
Writing Flash ROM (16Mbit x 2/ 16Mbit/8Mbit/32Mbit x 2/8Mbit x 2) (Flash ROM D)	The type (capacity) of the Flash ROM depends on which Flash ROM is made among the CPU PWB, and the ICU PWB.

(2) Method of copying with two Flash ROM sockets on the ICU MAIN PWB.
The program for each PWB in the Flash ROM (source ROM) on the Read side Flash ROM socket is copied to the Flash ROM on the Write side socket.

Necessary item	Note
Flash Rom including the ICU program and the Flash ROM copy (ROM to ROM) program (Flash ROM B) (32Mbit x 2)	Flash ROM made by writing the program data from PC to the Flash ROM (32Mbit x 2)
Flash Rom including the PCU program and the Flash ROM copy (ROM to ROM) program (Flash ROM B) (32Mbit x 2)	Flash ROM made by writing the program data from PC to the Flash ROM (32Mbit x 2)
Writing Flash ROM/16Mbit x 2/ 16Mbit/8iMbit/32Mbit x 2) (Flash ROM C)	The type (capacity) of Flash ROM is determined depending on the kind of Flash ROM (in the PCU PWB or in the ICU PWB).

(In the case of Desk control ROM)

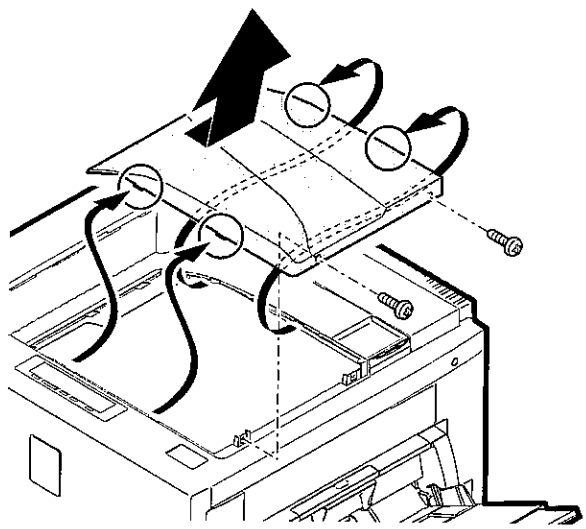
Necessary item	Note
Level converter	UKOG-0002QSZZ (with serial cable)/ UKOG-0003QSZZ (without serial cable)
PC	Windows 95/98/2000 environment
Download program file	Software to write the program data from PC to the Flash ROM. (Mainte_xxxx.exe)
Desk control Flash ROM program file	WDskxxx_d.pgm

4. Flash ROM version up procedure

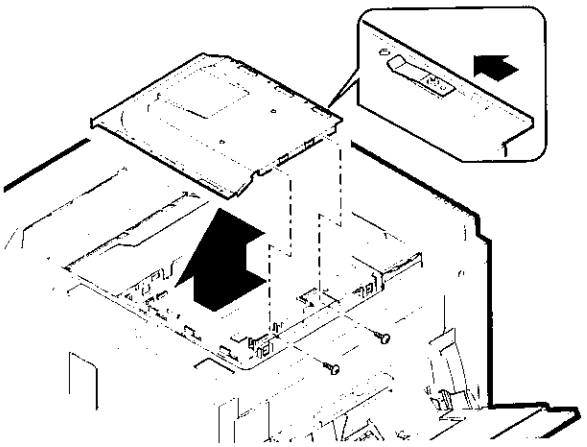
(In the case of PCU ROM, ICU ROM)

(Preliminary procedure)

1) Remove the machine paper tray cabinet. (2 screws)

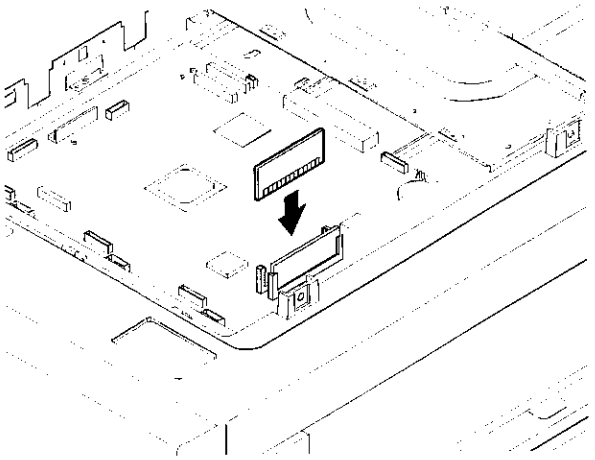


2) Remove the shield plate. (2 screws)

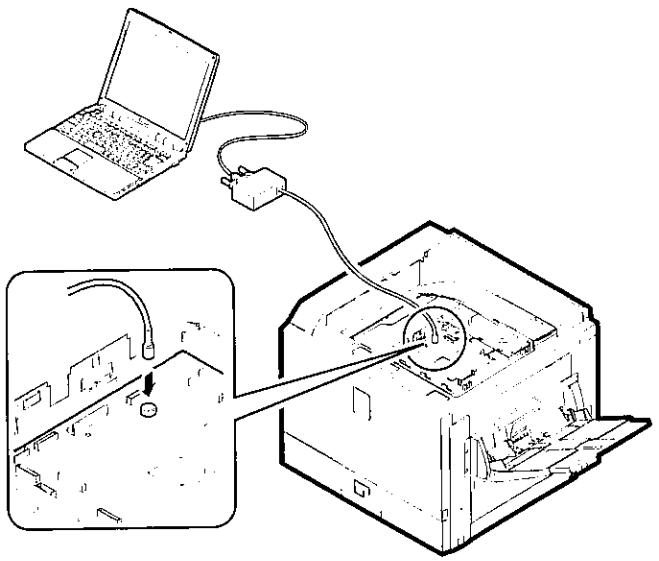


A. By using a computer and the ICU PWB, the program data of Flash ROM is written from the computer to the Flash ROM of the ICU PWB.

1) Check that the power of the machine is turned off. Install the Flash ROM which is to be upgraded (copied) to the write socket of the ICU PWB.



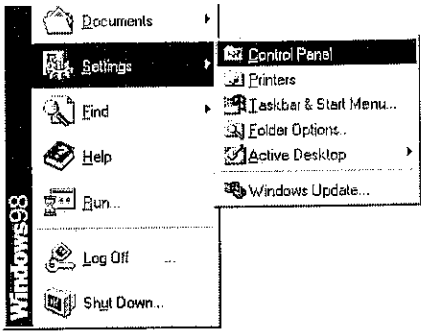
2) Connect the computer with the level converter.



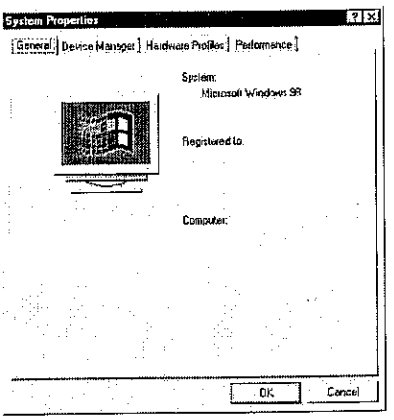
3) Connect the serial I/F connector on the ICU MAIN PWB with the level converter.
4) Turn on the computer to start Windows.
5) Turn on the machine.
6) Set the communication speed on the computer side.

In the case of Windows 95/98:

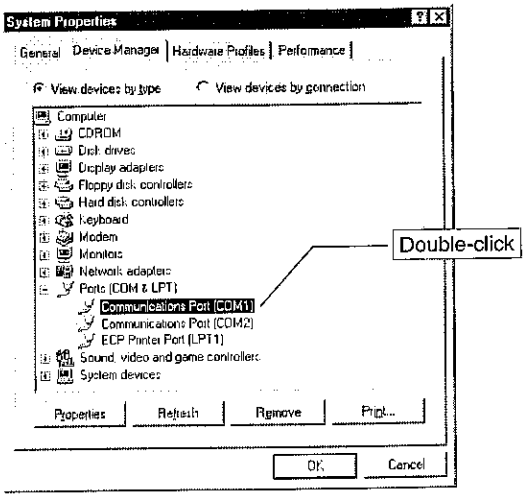
(6-1) Open the "Control panel."



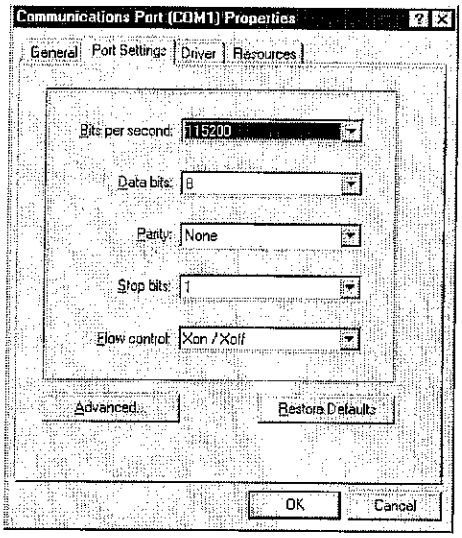
(6-2) Open the "System."



(6-3) Click the "Device manager." Click the "Port (COM/LPT)" and double-click the "Communication port (COM*)" to be used.

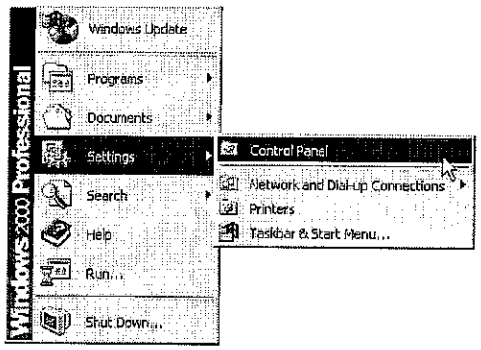


(6-4) Open the "Port setup" tab, and enter "115200" in the column of bit/sec.
If the above communication speed cannot be set, select and set one of the following speeds.
9600/19200/38600/57600

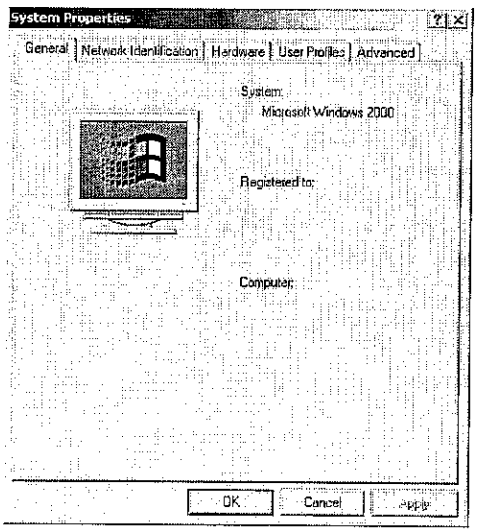


In the case of Windows 2000:

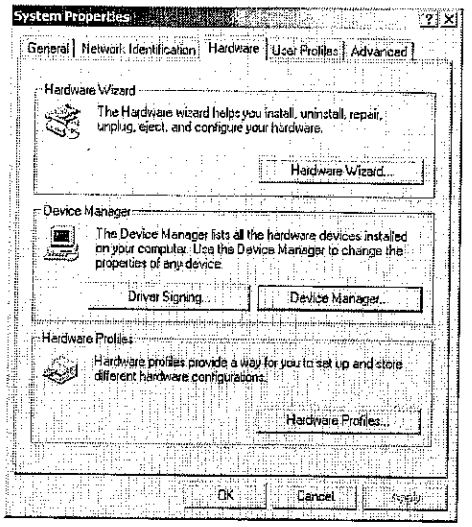
(6-1) Open the "Control panel."



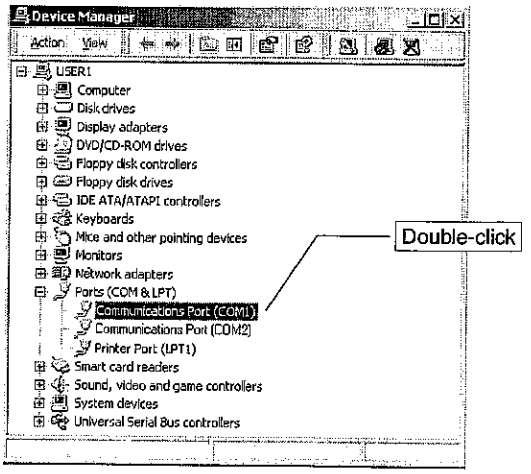
(6-2) Open the "System."



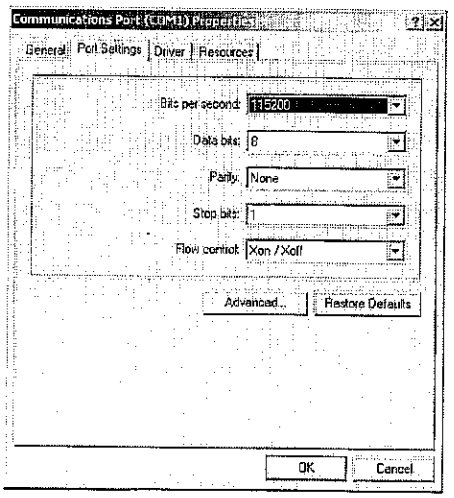
(6-3) Select the "Device manager (D)" on the hardware menu.


System Properties
General
Network Identification
Hardware
User Profiles
Advanced
Hardware Wizard
The Hardware wizard helps you install, uninstall, repair, unplug, eject, and configure your hardware.
Hardware Wizard...
Device Manager
The Device Manager lists all the hardware devices installed on your computer. Use the Device Manager to change the properties of any device.
Driver Signing...
Device Manager...
Hardware Profiles
Hardware profiles provide a way for you to set up and store different hardware configurations.
Hardware Profiles...
OK
Cancel

(6-4) Click the "Port (COM/LPT)" and douche-click the "Communication port (COM*)" to be used.

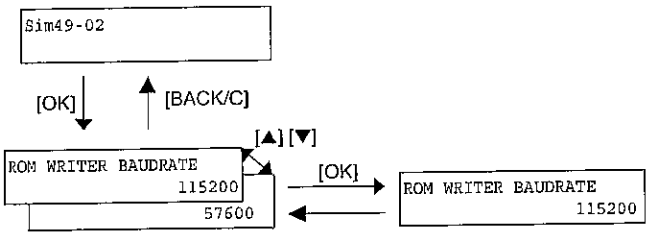


(6-5) Open the "Port setup" tab, and enter "115200" in the column of bit/sec.
If the above communication speed cannot be set, select and set one of the following speeds.
9600/19200/38600/57600



7) Set the communication speed on the machine side. The set value of communication speed on the computer side must be the same as that on the machine side.

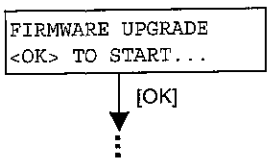
(7-1) Enter the simulation 49-2 mode.



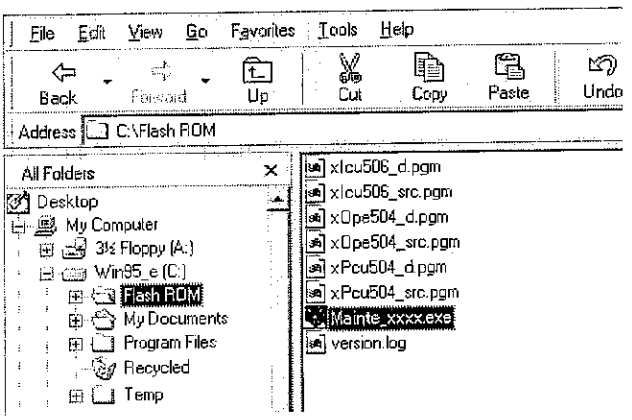
(7-2) Select the same communication speed with the communication speed set in procedure 7) with [▲] [▼] keys and press the [OK] key. (The DATA LED flashes.)

(7-3) Cancel the simulation 49-2.

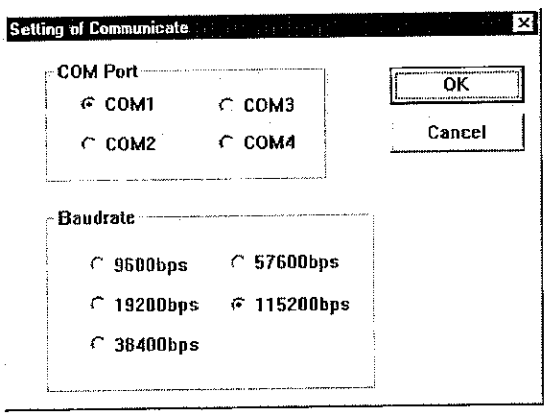
8) Enter the simulation mode 49-1 mode, and press the [OK] key. (The machine enters the download (Flash ROM writing) mode.)



9) Start the download program on the computer side. (Double-click the Mainte.exe file.)

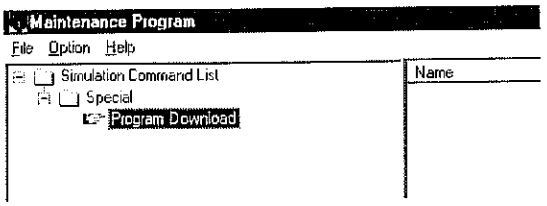


10) Select the communication speed on the option menu. (Set the communication speed same as what is set in procedures 6) and 7).)



11) Select the data file to be copied (written) to the Flash ROM installed to the Write socket on the ICU MAIN PWB in procedure 1).

(11-1) Double-click the "Simulation Command List " holder.

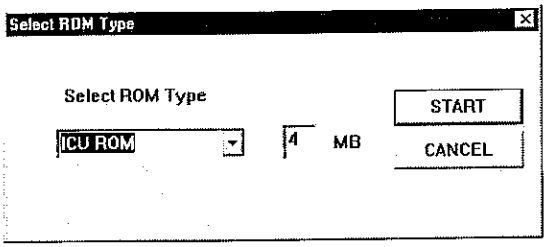


(11-2) Double-click the "Special" holder.

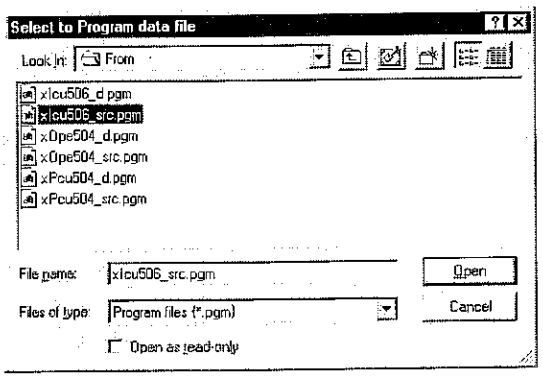
(11-3) Double-click the "Program Download" file.

(11-4) The message of "Program Download OK ?" is displayed. Press the OK button.

(11-5) Select the data (PWB name) to be written and click the START button.



(11-6) Select the data file to be written, and click the "Open" button.



With the above procedure, downloading (writing to the Flash ROM) is started.

(NOTE) Selection of data files to be written determines whether a source ROM (which includes the latest version program and the Flash ROM copy program) or a ROM which has only the latest version program is made.

12) Confirm that downloading (copying to the Flash ROM) is completed on the computer display and on the LCD display. It normally takes 5 to 7 minutes to copy (write) to the Flash ROM.

When downloading is normally completed, the following indications are shown.

* LED1 and LED2 on the ICU PWB flash at a low speed.
* "FIRMWARE UPGRADE FINISHED" is displayed on the LCD.

13) Cancel the simulation 49-1, and turn off the power of the machine.

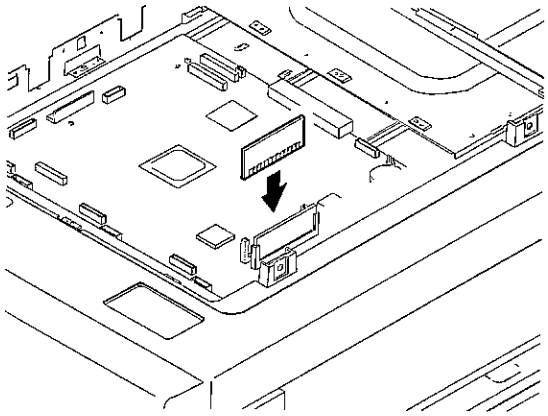
(Note) If the Flash ROM is removed from or installed to the machine with the machine power ON, the Flash ROM may be destroyed. Be sure to turn off the power of the machine before removing or installing the Flash ROM.

14) Remove the Flash ROM (which was upgraded) installed to the ICU MAIN PWB Write socket in procedure 1).

When another Flash ROM is to be upgraded, install it to the ICU PWB Write socket and turn on the power, and perform procedures 11) through 14).

B. Method using two Flash ROM sockets on the ICU MAIN PWB to copy between Flash ROM's

1) Check that the power of the machine is OFF. Install the Flash ROM (of either of ICU PWB, PCU PWB, or desk control PWB) to the ICU PWB Write socket.



2) Install the source Flash ROM (which has the program data of either of ICU PWB, PCU PWB, or desk control PWB) to the ICU PWB Read socket.
3) Turn on the power of the machine. Copying is started. When copying is completed, and LED1 and LED2 on the ICU PWB flash at a low speed. It normally takes 30 to 60 sec to copy (write) to the Flash ROM.
4) Turn off the power of the machine, and remove the Flash ROM's from the Read and the Write sockets.

(After work)

1) Installed the copied Flash ROM to the specified PWB.
2) Turn on the power of the machine and check that the machine operates normally.
3) Use the simulation 22-5 to check each ROM version.
4) Install the shield plate and the stopper shift. (3 screws)
5) Attach the right upper cabinet of the machine. (2 screws)

(NOTE)

The monitor displays before and after and during the Flash ROM version up (copy) operation are shown below. If the Flash ROM version up operation is not completed normally or if the Flash ROM is not installed to the socket properly, a trouble code is displayed. In that case, perform the countermeasures shown in the table below.

(1) ICU MAIN PWB monitor LED lighting specification

The monitor LED status during copy (write) operation of PC to Flash ROM and Flash ROM to Flash ROM is shown below. In the copy mode of Flash ROM to Flash ROM, the machine status is indicated only with the monitor LED.

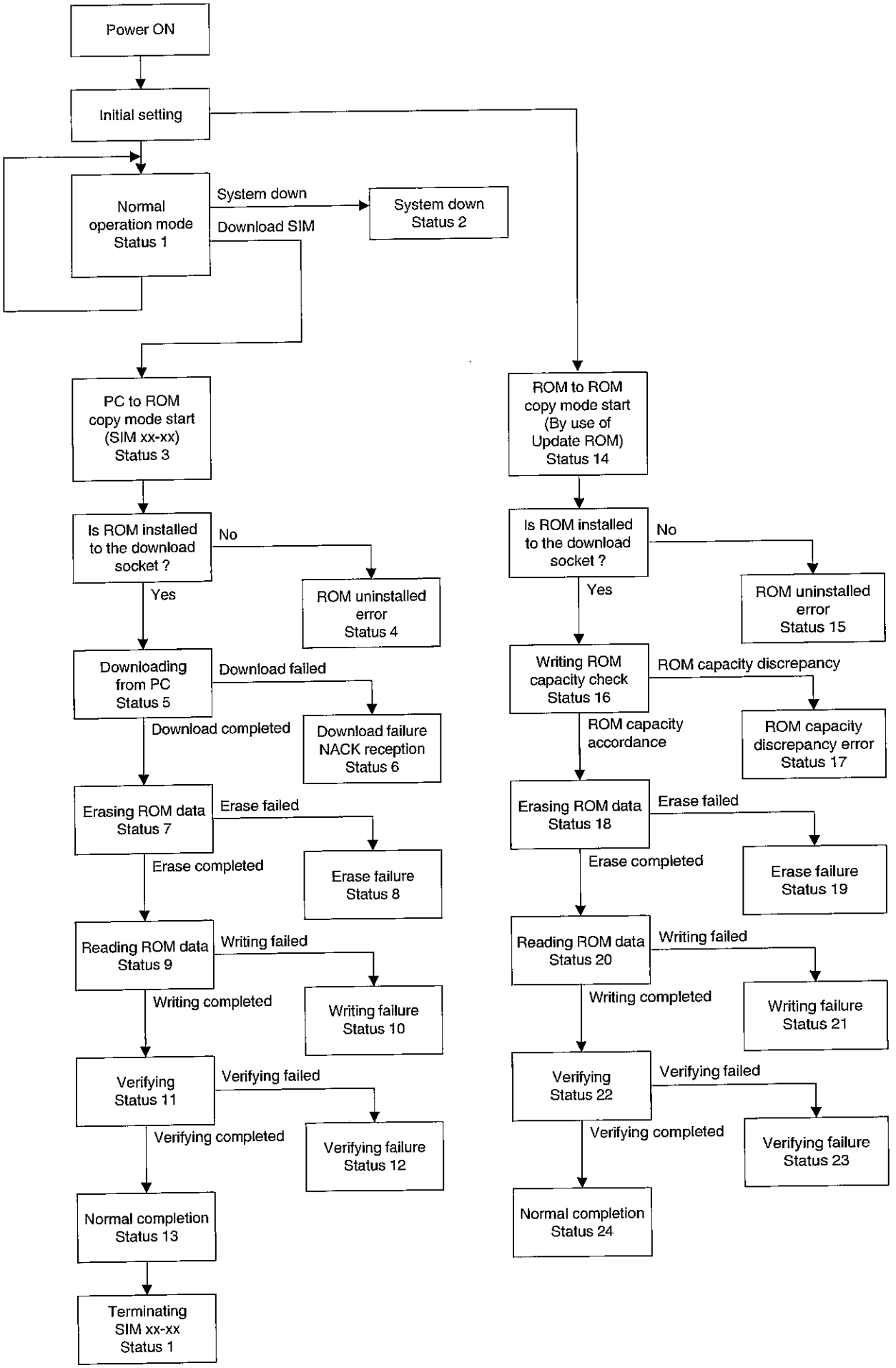
While in the copy mode of PC to Flash ROM, the status is indicated on the operation panel or the PC monitor.

Status LED lighting specifications

	LED5	LED6		Mode
Status 1	OFF	OFF		Normal operation
Status 2	High-speed flashing	High-speed flashing		System down
Status 3	ON	OFF		Download SIM start
Status 4	OFF	Flashing		Download ROM not-installed error
Status 5	Flashing	ON		During data transfer from PC
Status 6	Flashing	Flashing		Data transfer error from PC
Status 7	ON	ON		Flash deleting
Status 8	OFF	Flashing	Same as Status 4.	Flash deleting error
Status 9	Flashing	ON	Same as Status 7.	Flash writing
Status 10	Flashing	Flashing	Same as Status 6.	Flash writing error
Status 11	ON	ON	Same as Status 7.	Verifying
Status 12	ON	Flashing		Verifying error
Status 13	ON	ON	Same as Status 7.	Normal completion

	LED5	LED6		Mode
Status 14	ON	OFF	Same as Status 3.	ROM copy start
Status 15	OFF	Flashing	Same as Status 4.	Download ROM not-installed error
Status 16	ON	ON	Same as Status 7.	ROM capacity checking
Status 17	ON	Flashing	Same as Status 12.	ROM capacity check error
Status 18	ON	ON	Same as Status 7.	Flash deleting
Status 19	OFF	Flashing	Same as Status 4.	Flash deleting error
Status 20	Flashing	ON	Same as Status 5.	Flash writing
Status 21	Flashing	Flashing	Same as Status 6.	Flash writing error
Status 22	ON	ON	Same as Status 7.	Verifying
Status 23	ON	Flashing		Verifying error
Status 24	ON	ON	Same as Status 7.	Normal completion

Status in bold means an error


Power ON
Initial setting
Normal operation mode Status 1
System down
Download SIM
System down Status 2
PC to ROM copy mode start (SIM xx-xx) Status 3
Is ROM installed to the download socket ?
No
Yes
ROM uninstalled error Status 4
Downloading from PC Status 5
Download failed
Download completed
Download failure NACK reception Status 6
Erasing ROM data Status 7
Erase failed
Erase completed
Erase failure Status 8
Reading ROM data Status 9
Writing failed
Writing completed
Writing failure Status 10
Verifying Status 11
Verifying failed
Verifying completed
Verifying failure Status 12
Normal completion Status 13
Terminating SIM xx-xx Status 1
ROM to ROM copy mode start (By use of Update ROM) Status 14
Is ROM installed to the download socket ?
No
Yes
ROM uninstalled error Status 15
Writing ROM capacity check Status 16
ROM capacity discrepancy
ROM capacity accordance
ROM capacity discrepancy error Status 17
Erasing ROM data Status 18
Erase failed
Erase completed
Erase failure Status 19
Reading ROM data Status 20
Writing failed
Writing completed
Writing failure Status 21
Verifying Status 22
Verifying failed
Verifying completed
Verifying failure Status 23
Normal completion Status 24

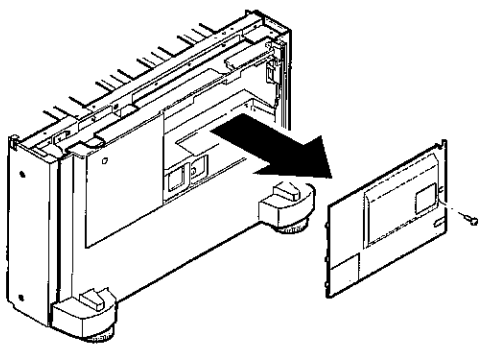
(2) Operation panel display specifications (SIM 49-1)
The operation panel display status in PC to Flash ROM copying (writing) is shown in the table below.

Display message	Operation/Content	Countermeasures
NOW EXECUTING ...	Simulation start	
THIS PRINTER IS NOT CONNECTED TO PC.	The cable is not connected.	Turn off the power of the copier machine, and check the connection again.
FLASH ROM ISN'T INSERTED INTO A CONNCTOR.	The writing Flash ROM is not inserted into the socket.	Turn off the copier machine, insert the Flash ROM.
WAITING FOR DATA	Waiting for starting the Flash ROM writing software on PC side	Boot the software for writing to Flash ROM on PC.
ERASING FLASH ...	Deleting	
WRITING FLASH ...	Writing	
VERIFYING FLASH ...	Verifying	
FLASH ERASE ERROR.	Failure in erase of Flash ROM for writing	Try again, or replace the Flash ROM.
FLASH WRITE ERROR.	Failure in copy (write) of Flash ROM for writing	Try again, or replace the Flash ROM.
FLASH VERIFY ERROR.	Failure in verifying Flash ROM content for writing	Try again, or replace the Flash ROM.
DOWNLOADING NOW ...	Data downloading	
DOWNLOAD ERROR.	Data transfer failure	Tray data transfer again, or tray simulation again.
FIRMWARE UPGRADE FINISHED.	Data transfer complete	
THIS SIMULATION DOES NOT WORK IN THIS ROM VERSION.	Displayed when ICU Flash ROM does not support this simulation.	ICU Flash ROM Version up

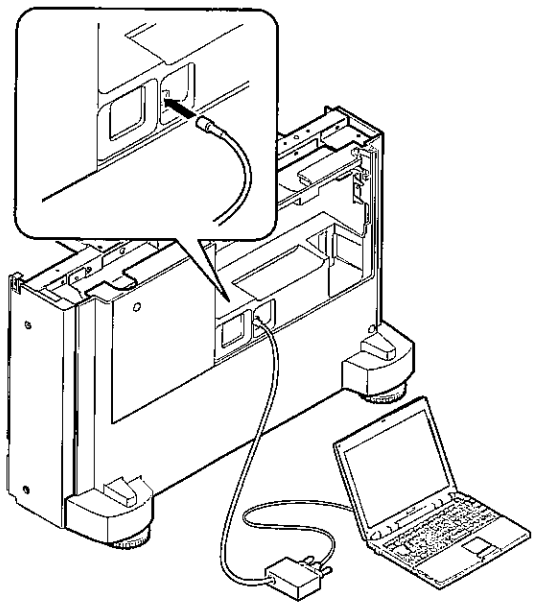
When the power of PC is down during data transfer, data transfer is performed from the beginning.

(In the case of Desk control PWB)

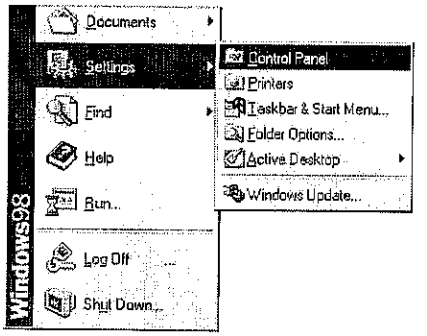
1) Remove the desk unit power source cover. (One screw)



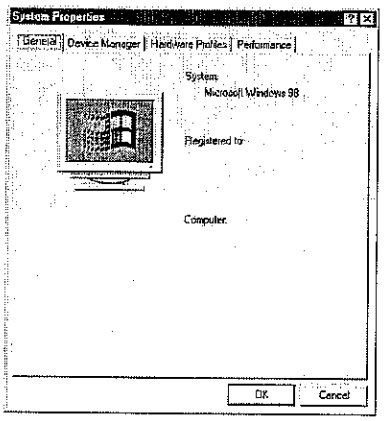
2) Check that the machine power is off, and connect the PC and the level converter desk unit serial I/F connector and the level converter.



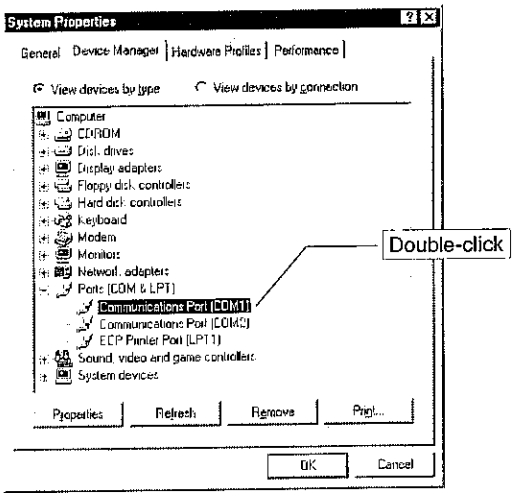
3) Turn on the PC, and start Windows.
4) Set the data transfer speed of PC.
In the case of Windows 95/98:
(4-1) Open the "Control panel."



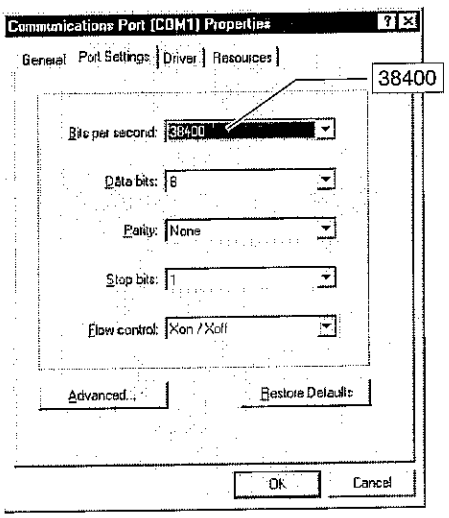
(4-2) Open the "System."



(4-3) Click the "Device manager" and click the "Port (COM/LPT)," and double-click the "Communication port (COM*) to be used.

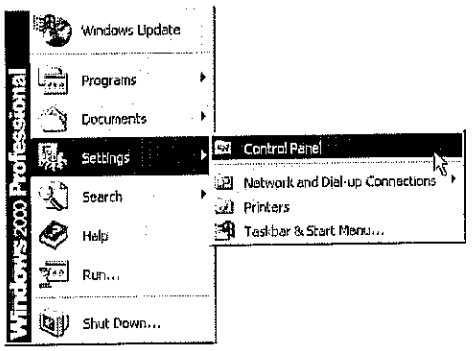


(4-4) Set the bit/sec of port set menu to 38400.
If 38400 cannot be set, set either of the following communication speeds.
9600/19200

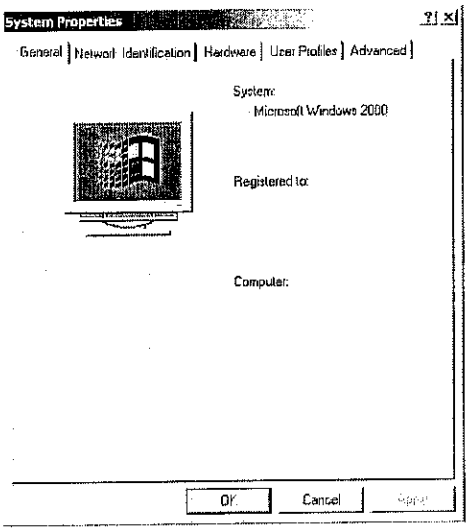


In the case of Windows 2000:

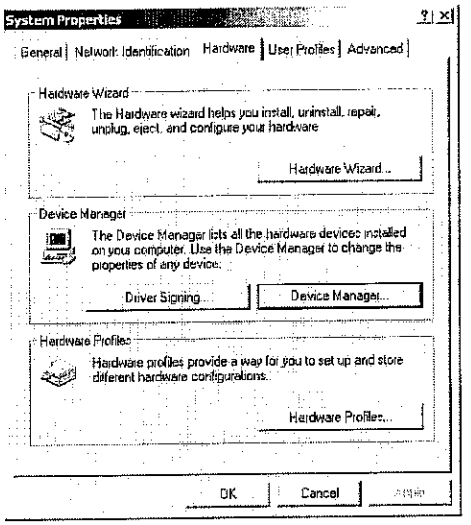
(4-1) Open the "Control panel."



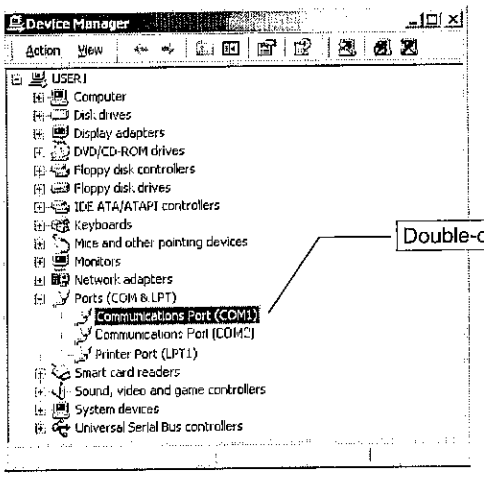
(4-2) Open the "System."



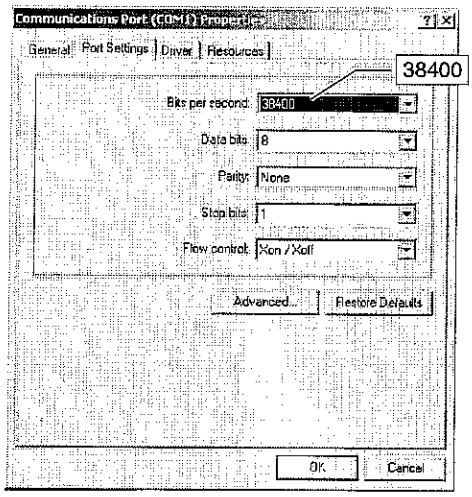
(4-3) Open the "Device manager" on the hardware menu.


System Properties
General
Network Identification
Hardware
User Profiles
Advanced
Hardware Wizard
The Hardware wizard helps you install, uninstall, repair, unplug, eject, and configure your hardware
Hardware Wizard...
Device Manager
The Device Manager lists all the hardware devices installed on your computer. Use the Device Manager to change the properties of any device.
Driver Signing...
Device Manager...
Hardware Profiles
Hardware profiles provide a way for you to set up and store different hardware configurations.
Hardware Profiles...
OK
Cancel

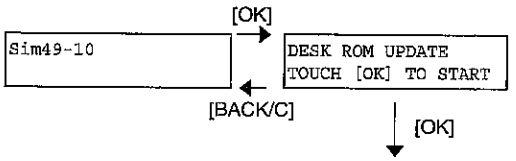
(4-4) Click the "Port (COM/LPT)", and double-click the "Communication port (COM*)" to be used.



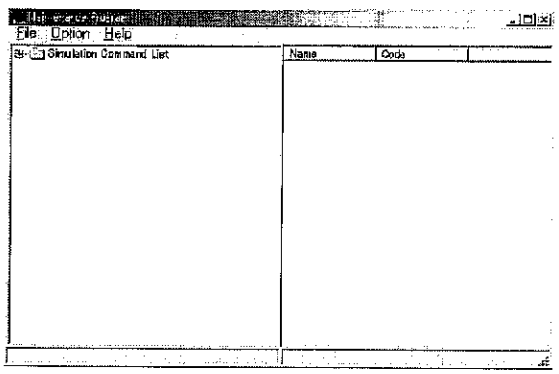
(4-5) Set the bit/sec of the port set menu to 38400, and click the OK button to close the communication port (COM*) property.
If 38400 cannot be set, set either of the following communication speeds.
9600/19200



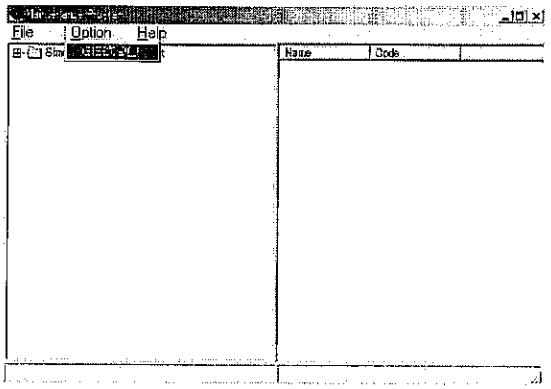
5) Turn on the power of the machine.
6) Enter the simulation 49-10 mode. (Press the [OK] key to enter the download (Flash ROM writing) mode.)

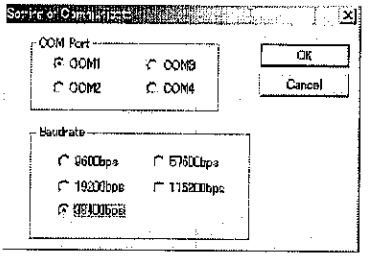


7) Start the download program on the PC side by double-clicking the Mainte.exe file. The following window is indicated.

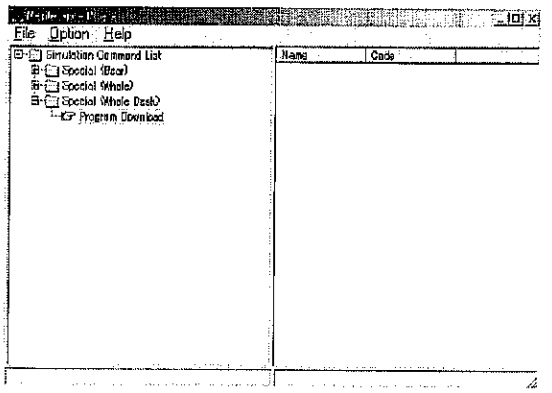


8) Select the communication setup in the option menu, and set the communication speed same as which is set in procedure 4).

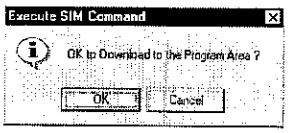




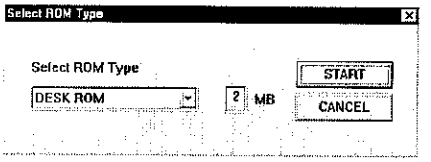
9) Select the data file to be written.
(9-1) Double-click the Simulation Command List folder.
(9-2) Double-click the Special (Whale Desk) folder.



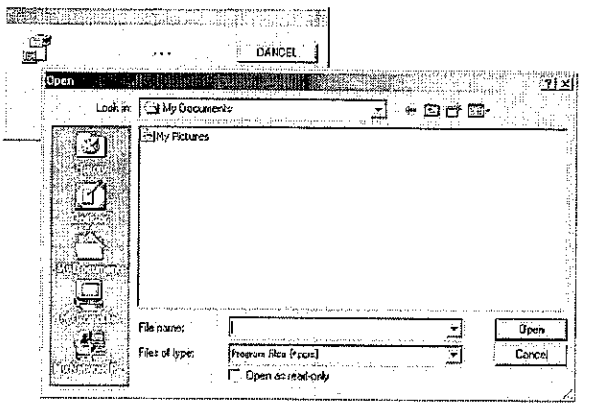
(9-3) Double-click the file Program Download, and the following dialog is displayed. Click the OK button.



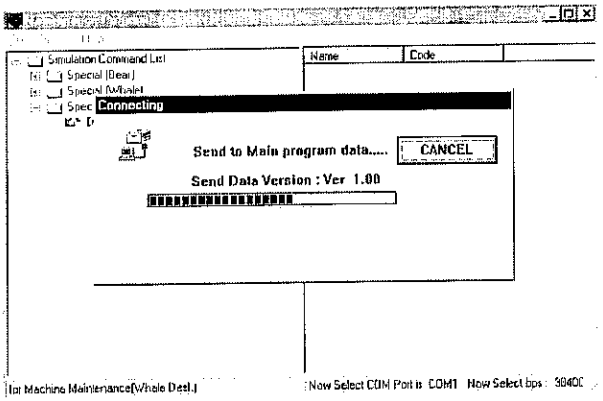
(9-4) Then the following dialog is displayed. Click the START button.



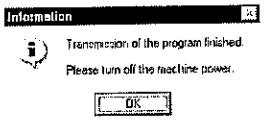
(9-5) The file selection dialog is displayed. Select the data file to be written, and click the Open button.



10) With the above procedures, writing is started and the following display is shown.



11) Check on the PC display that writing is completed. (When writing is normally completed, the following dialog is displayed.)



12) Turn off the machine power, and disconnect the level converter.

(NOTE) When connecting or disconnecting the level converter, be sure to turn off the machine power in advance. If the level converter is connected or disconnected with the power ON, the level converter may be damaged.

5. Printer controller

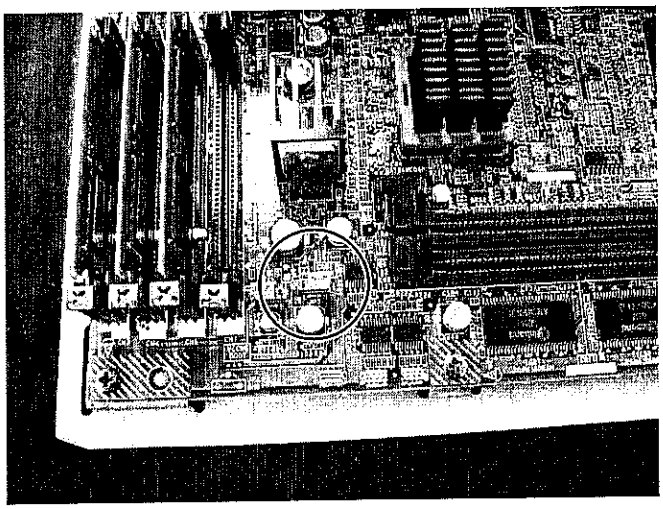
A. Firmware version up

(1) Necessary items

1) Personal computer (PC)
2) Parallel cable
3) Printer program data file (xxx.blk)

(2) Procedure

1) Use SIM 22-5 to check the current firmware version.
2) Turn off the power.



3) Connect the PC and the machine with the parallel cable.
4) Turn on the power.
5) Execute SIM 67-14. (Check that "PLEASE SEND DATA" is displayed.)
6) The download file (printer program) is downloaded. (xxx.blk)

(Note) Never turn off the power during downloading.

Boot the DOS prompt. → Check that the printer READY lamp lights up. → Type "> copy xxx.blk lpt1" on the DOS prompt.

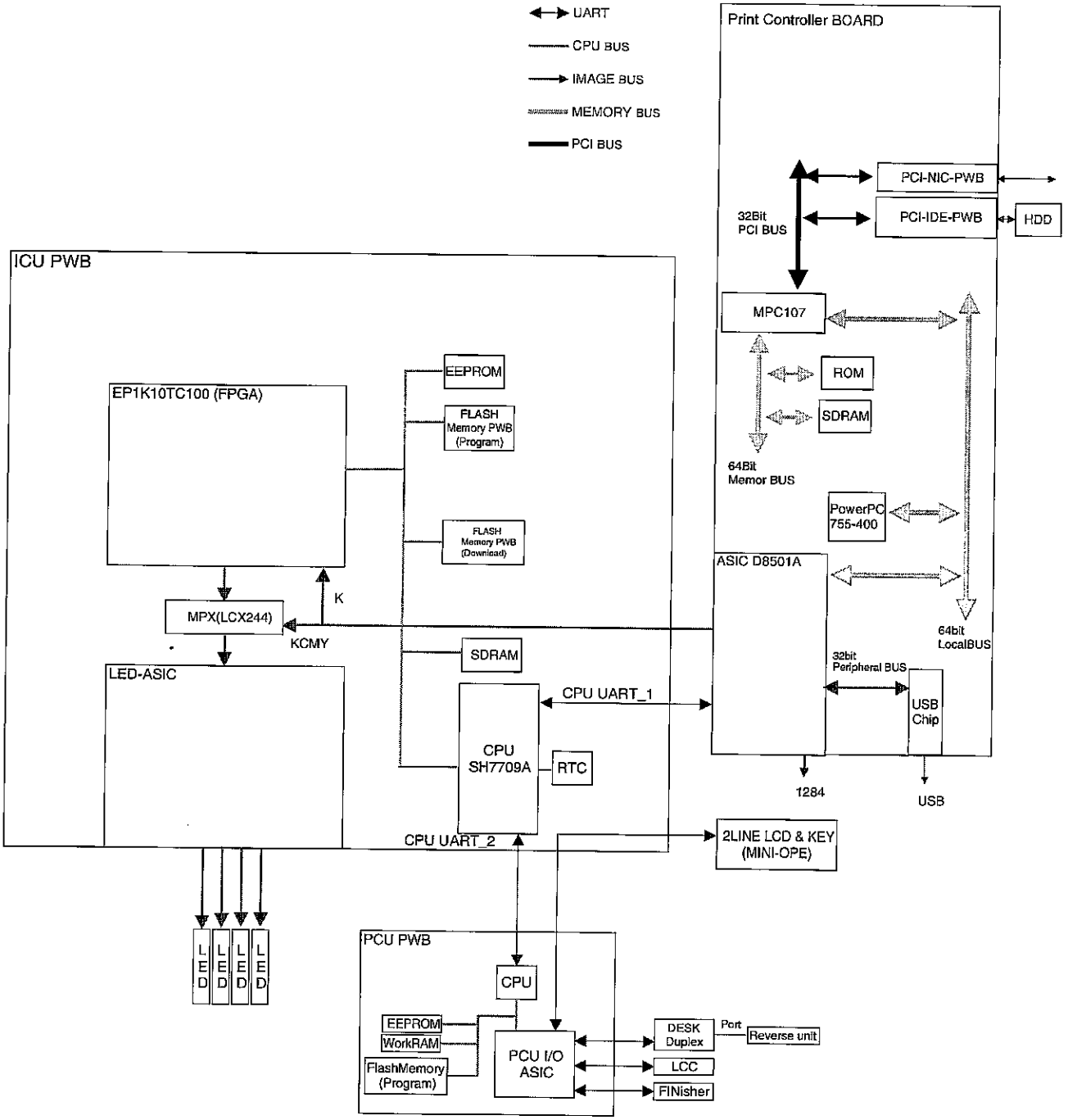
The machine display shifts as follows. Check that "COMPLETED" is displayed at the end.

RECEIVING → ERASING → WRITING → VERIFYING → COMPLETED

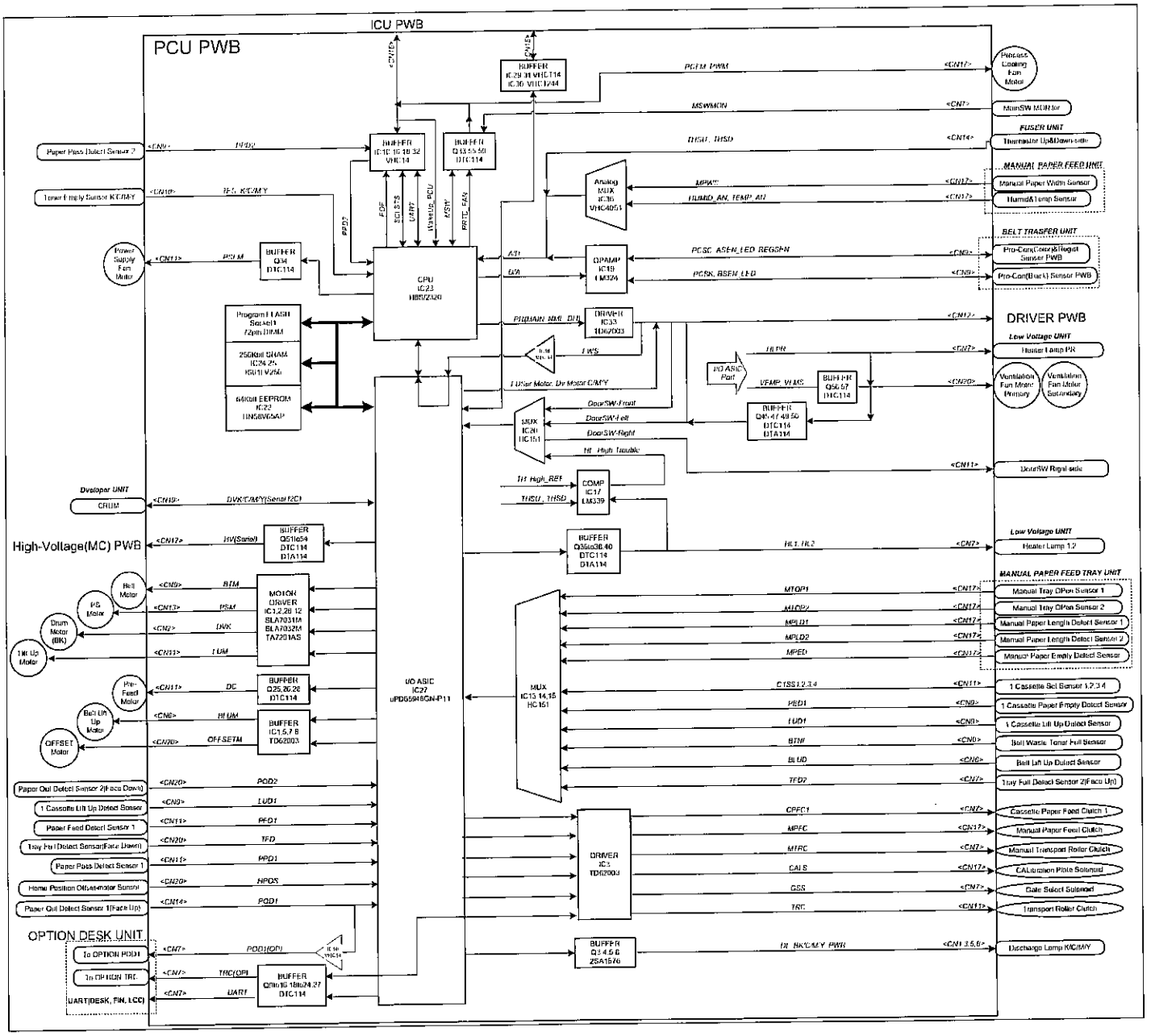
7) Turn off/on the power to reboot.
8) Use SIM 22-5 to check the firmware version.
9) Use SIM 67-17 to clear the controller NVRAM.
10) After rebooting, try printing from the PC and check that printing is completed normally.

[13] ELECTRIC DIAGRAM

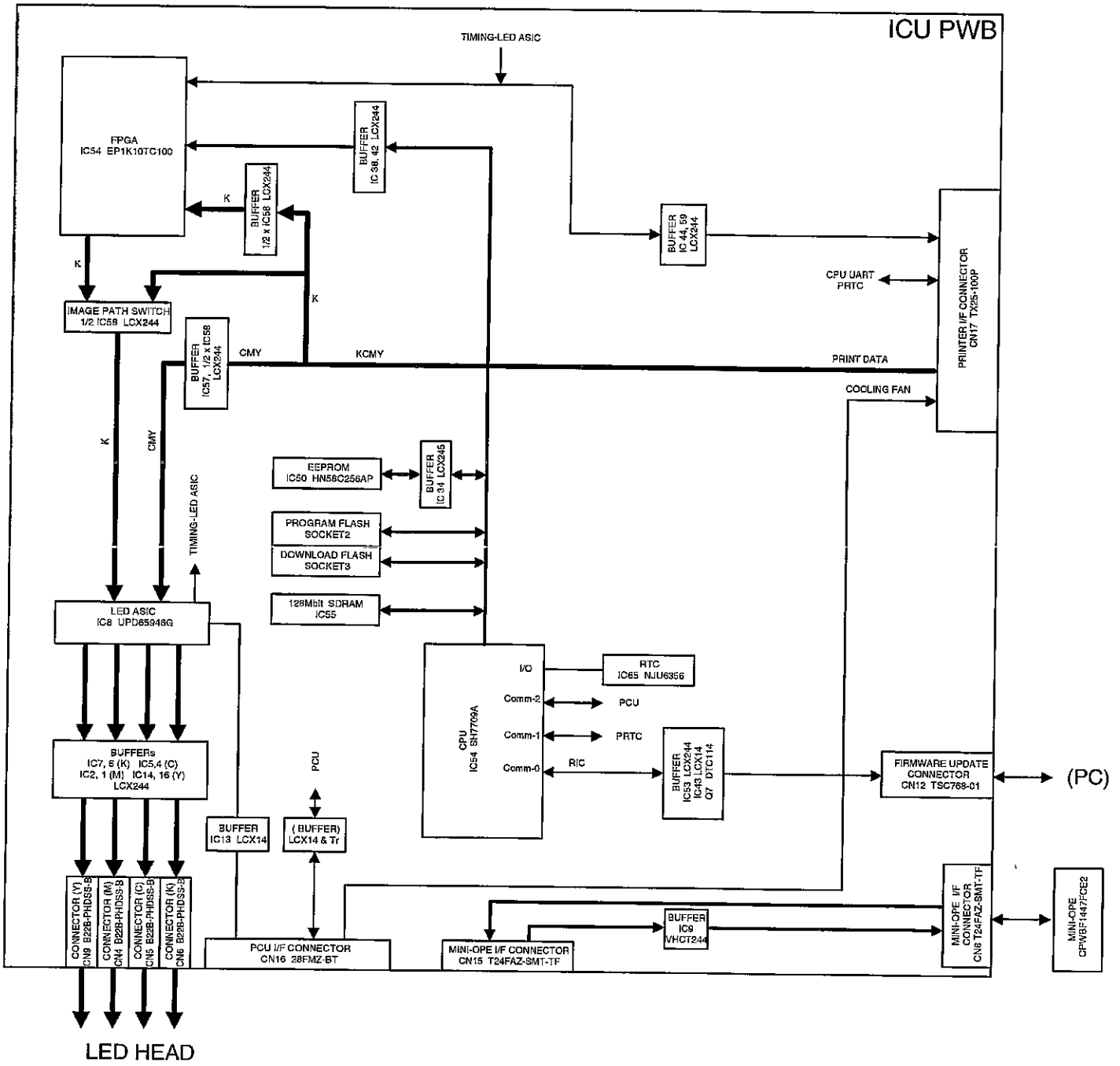
1. Block diagram



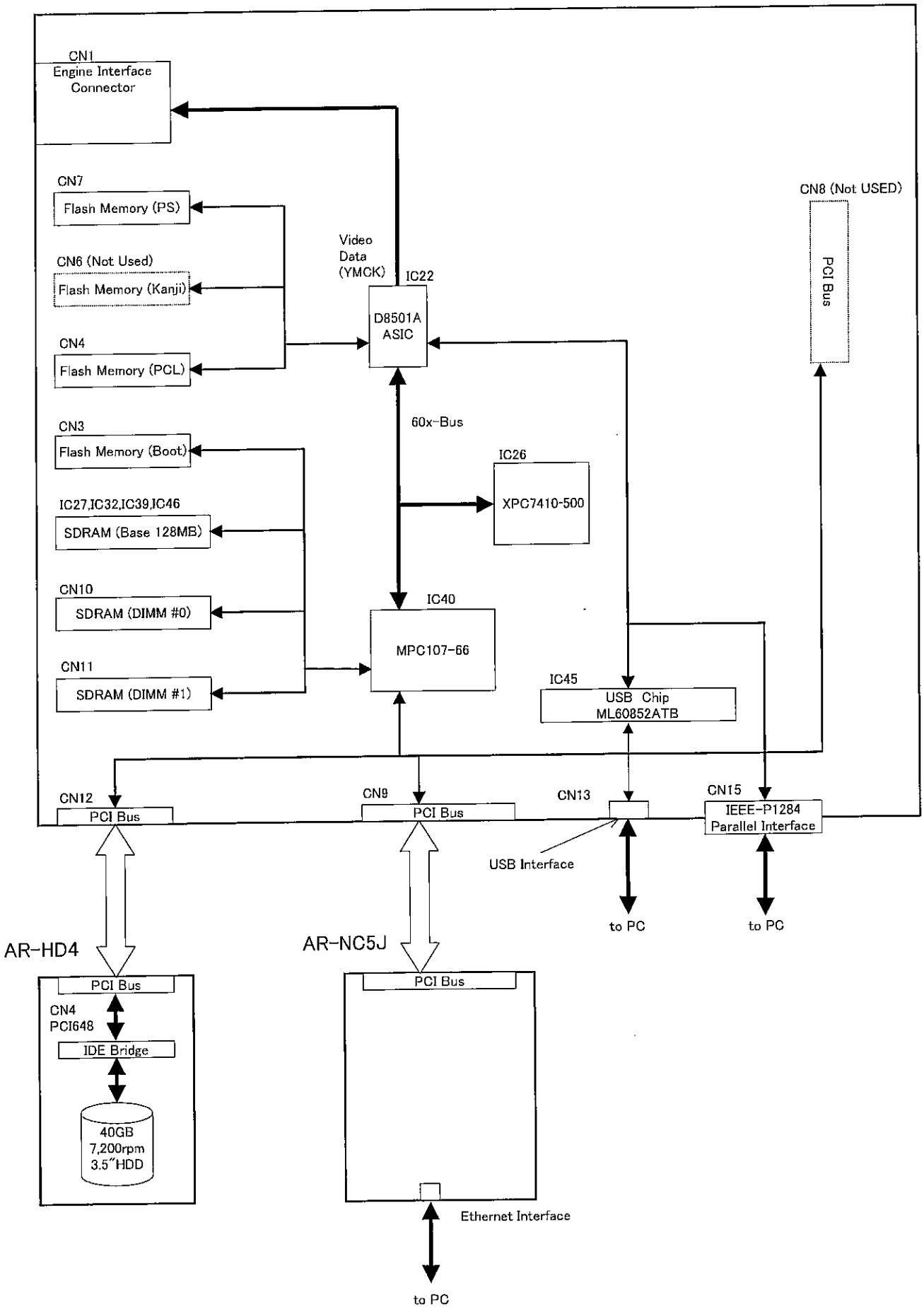
A. PCU PWB


ICU PWB
PCU PWB
DRIVER PWB
High-Voltage(MC) PWB
OPTION DESK UNIT
CPU
IC23
H8S/2320
I/O ASIC
IC27
uPD65948GN-P11
MOTOR DRIVER
IC1,2,28,12
SLA7031M
SLA7032M
TA7291AS
DRIVER
IC5
TD62003
MUX
IC13,14,15
HC151
Process Cooling Fan Motor
Main SW Monitor
FUSER UNIT
Thermistor Up&Down side
MANUAL PAPER FEED UNIT
Manual Paper Width Sensor
Humid&Temp Sensor
BELT TRASFER UNIT
Pre-Con(Color)&Regist Sensor PWB
Pre-Con(Black) Sensor PWB
Low Voltage UNIT
Heater Lamp FR
Ventilation Fan Motor Primary
Ventilation Fan Motor Secondary
Door SW Right side
Low Voltage UNIT
Heater Lamp 1,2
MANUAL PAPER FEED TRAY UNIT
Manual Tray OPen Sensor 1
Manual Tray OPen Sensor 2
Manual Paper Length Detect Sensor 1
Manual Paper Length Detect Sensor 2
Manual Paper Empty Detect Sensor
1 Cassette Set Sensor 1,2,3,4
1 Cassette Paper Empty Detect Sensor
1 Cassette Lift Up Detect Sensor
Belt Waste Toner Full Sensor
Belt Lift Up Dulect Sensor
Tray Full Detect Sensor 2(Face Up)
Cassette Paper Feed Clutch 1
Manual Paper Feed Clutch
Manual Transport Roller Clutch
CALibration Plate Solenoid
Gate Select Solenoid
Transport Roller Clutch
Discharge Lamp K/C/M/Y
Paper Pass Detect Sensor 2
Toner Empty Sensor K/C/M/Y
Power Supply Fan Motor
Program FLASH Socket
72pin DIMM
256Kbit SRAM
IC24,25
HM(1 Vcc)
64Kbit EEPROM
IC22
LH5B9B65AP
Developer UNIT
CRUM
Bias Motor
PS Motor
Drum Motor (BK)
Tab Up Motor
Pre-Feed Motor
Belt Lift Up Motor
OFFSET Motor
Paper Out Detect Sensor 2(Face Down)
1 Cassette Lift Up Detect Sensor
Paper Feed Detect Sensor 1
Tray Full Detect Sensor(Face Down)
Paper Pass Detect Sensor 1
Home Position Offset-motor Sensor
Paper Out Detect Sensor 1(Face Up)
To OPTION POD1
To OPTION TRC
UART(DESK, FIN, LCC)
BUFFER
IC10,16,18,32
VHC14
BUFFER
Q33,55,58
DTC114
BUFFER
IC29,31 VHC714
IC30 VHC7244
Analog MUX
IC36
VHC4051
DPAMP
IC19
LM324
DRIVER
IC33
TD62003
MUX
IC20
IC151
COMP
IC17
LM339
BUFFER
Q35to38,40
DTC114
DTA114
BUFFER
Q56,57
DTC114
BUFFER
Q45,47,48,50
DTC114
DTA114
BUFFER
Q24,25,26,28
DTC114
BUFFER
IC1,5,7,8
TD62003
BUFFER
Q24,5,6
2SA1576
BUFFER
Q1to16,18to24,27
DTC114
I/O ASIC Part
PCFM_PWM
MSWMON
THSU, THSD
MPW
HUMID_AN, TEMP_AN
PCSC_ASEN_LED_REGSEN
PCSK_BSEN_LED
PRDRAIN_NML_DTL
LWS
HTPR
VFMP, VHMS
DoorSW-Front
DoorSW-Left
DoorSW-Right
HI_High_Trouble
TH_High_REF
THSU, THSD
HLT, HL2
MTOP1
MTOP2
MPLD1
MPLD2
MPED
C1SS1,2,3,4
PED1
LUD1
BTW
BLUD
TFD2
CPFC1
MPFC
MTRC
CALS
GSS
TRC
DI_BK/C/M/Y PWR

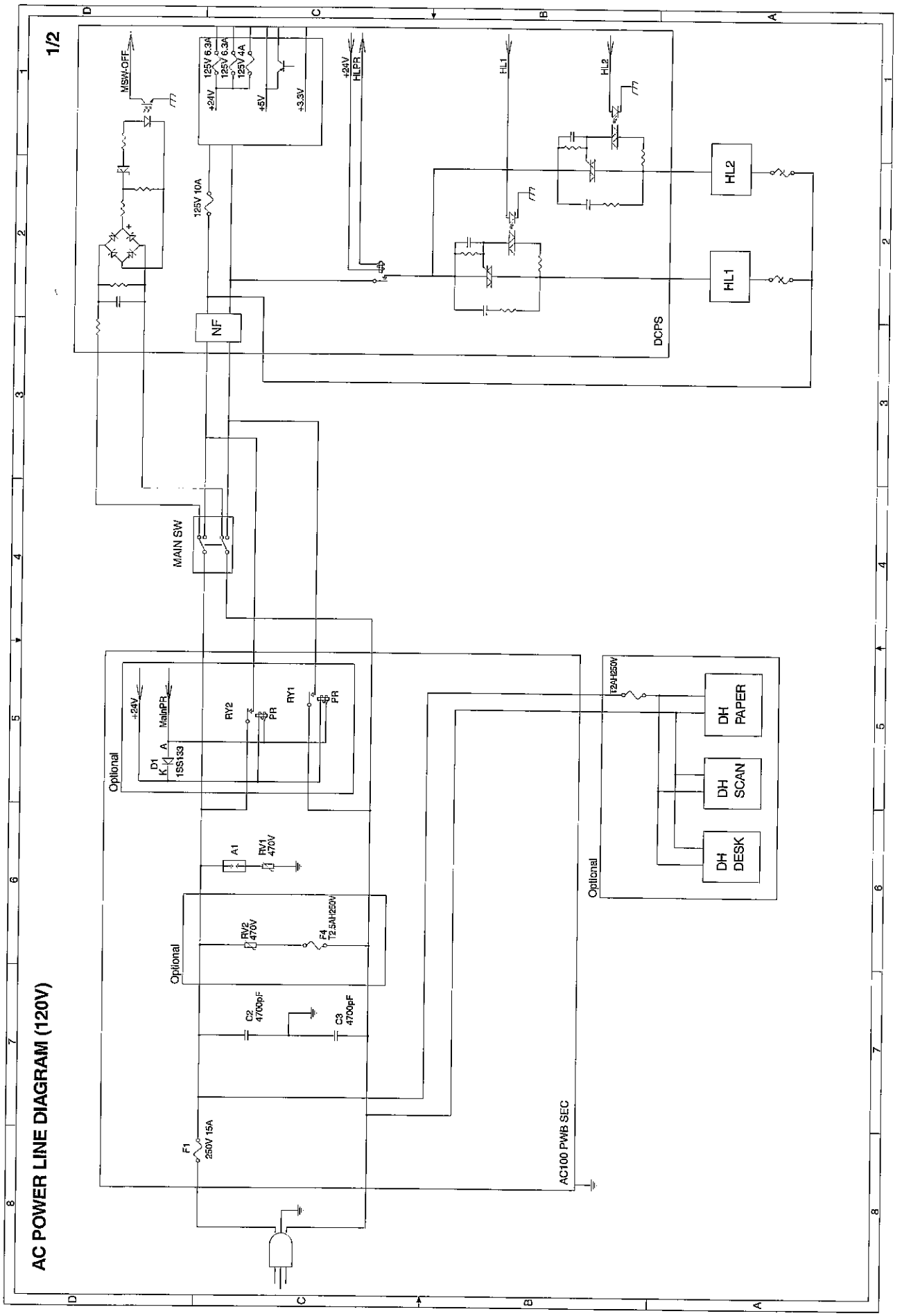
B. ICU PWB

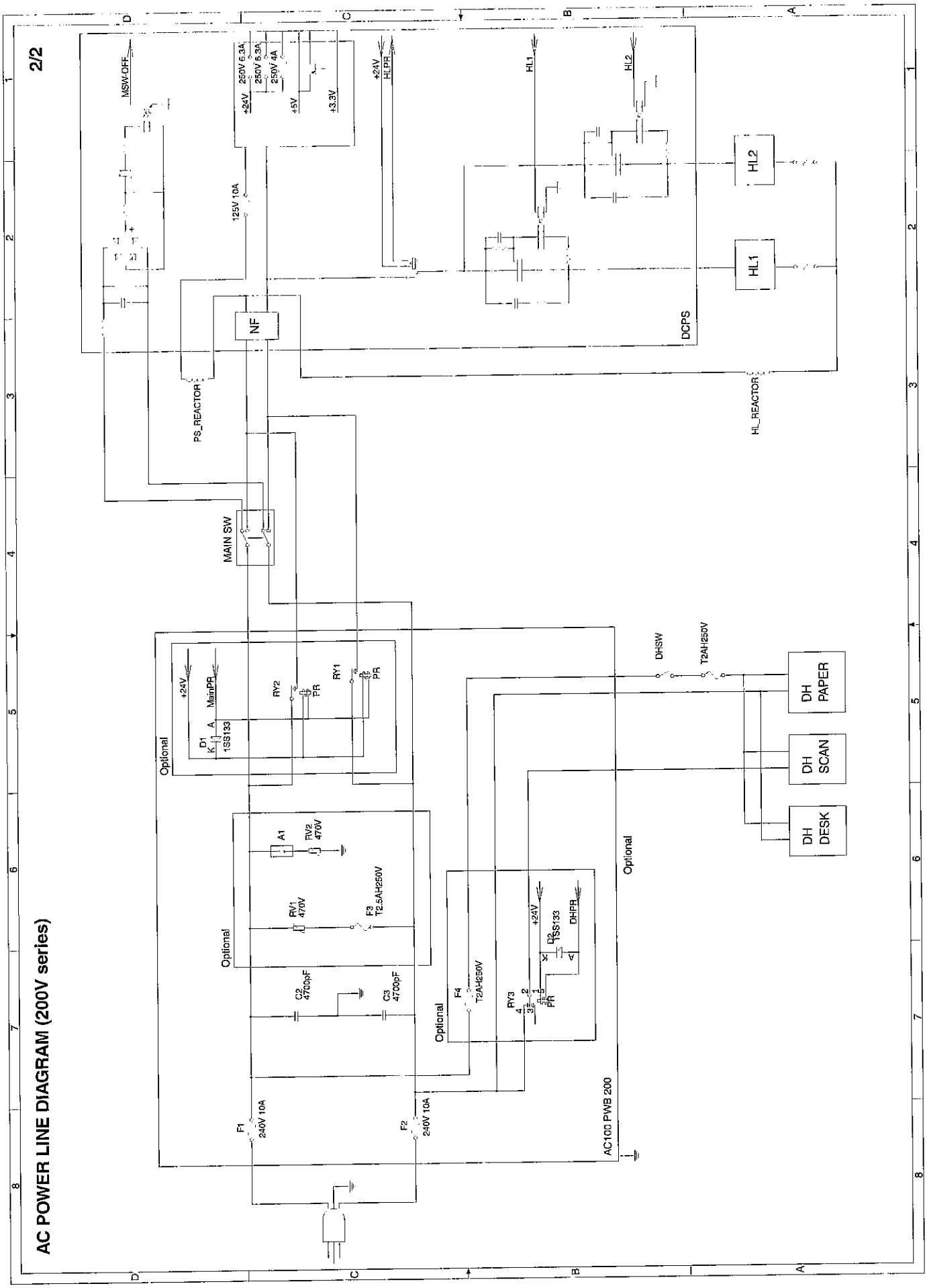

ICU PWB
TIMING-LED ASIC
FPGA
IC54 EP1K10TC100
BUFFER
IC 38, 42 LCX244
BUFFER
1/2 x IC58 LCX244
K
BUFFER
IC 44, 59
LCX244
CPU UART
PRTC
PRINTER I/F CONNECTOR
CN17 7X25-100P
IMAGE PATH SWITCH
1/2 IC58 LCX244
BUFFER
IC57, 1/2 x IC58
LCX244
CMY
KCMY
PRINT DATA
COOLING FAN
EEPROM
IC50 HN58C256AP
BUFFER
IC 34 LCX245
PROGRAM FLASH
SOCKET2
DOWNLOAD FLASH
SOCKET3
128Mbit SDRAM
IC55
LED ASIC
IC8 UPD65948G
CPU
IC54 SH7709A
I/O
Comm-2
Comm-1
Comm-0
RTC
IC65 NJU6356
PCU
PRTC
RIC
BUFFER
IC53 LCX244
IC43 LCX14
Q7 DTC114
FIRMWARE UPDATE
CONNECTOR
CN12 TSC768-01
(PC)
BUFFERs
IC7, 6 (K) IC5,4 (C)
IC2, 1 (M) IC14, 16 (Y)
LCX244
BUFFER
IC13 LCX14
(BUFFER)
LCX14 & Tr
CONNECTOR (Y)
CN9 B22B-PHDSS-B
CONNECTOR (M)
CN4 B22B-PHDSS-B
CONNECTOR (C)
CN5 B22B-PHDSS-B
CONNECTOR (K)
CN6 B22B-PHDSS-B
PCU I/F CONNECTOR
CN16 28FMZ-BT
MINI-OPE I/F CONNECTOR
CN15 T24FAZ-SMT-TF
BUFFER
IC9
VHCT244
MINI-OPE I/F
CONNECTOR
CN8 T24FAZ-SMT-TF
MINI-OPE
CP1WBF1447FCE2
LED HEAD

C. PRINT CONTROL PWB

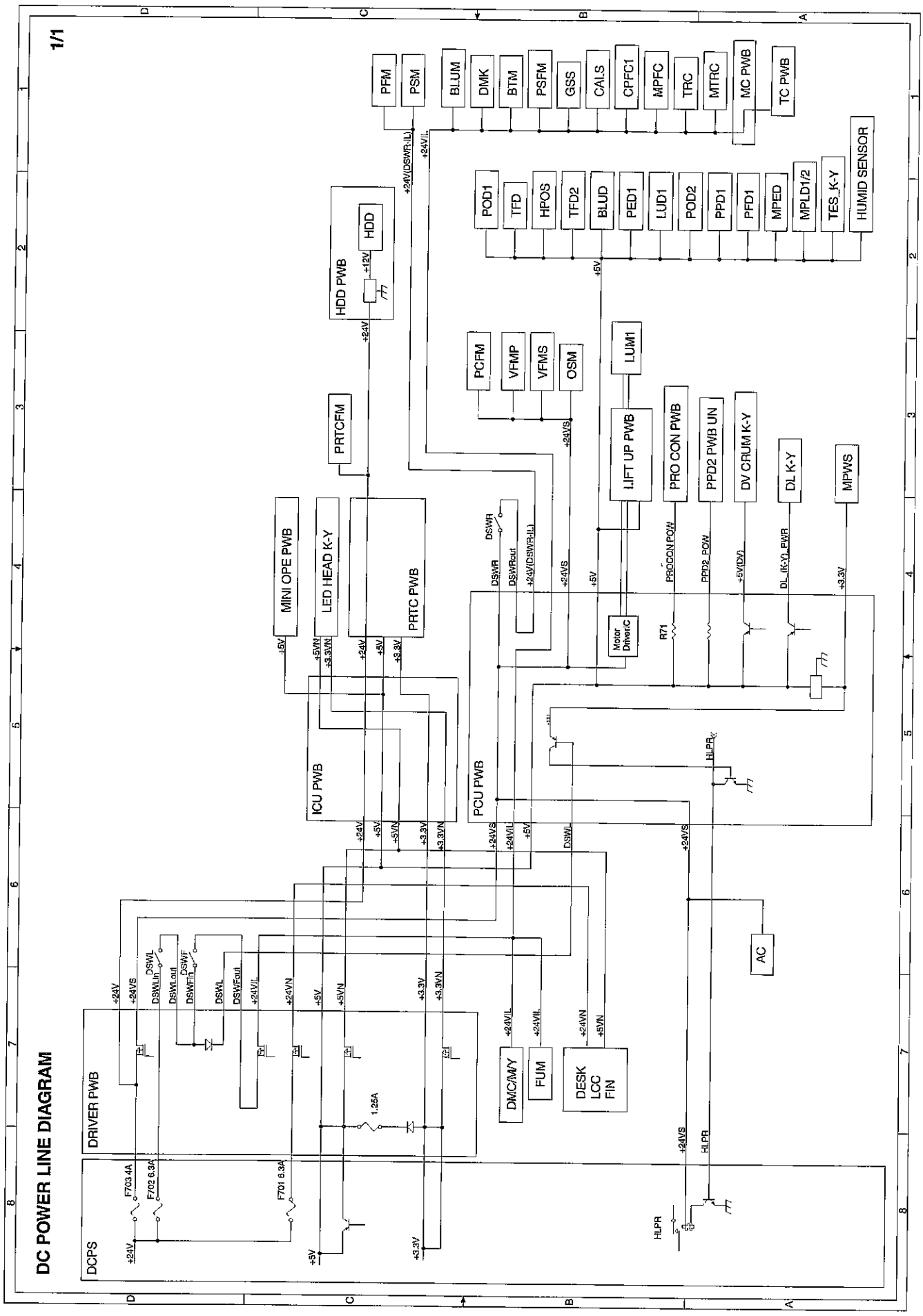


2. AC power line diagram



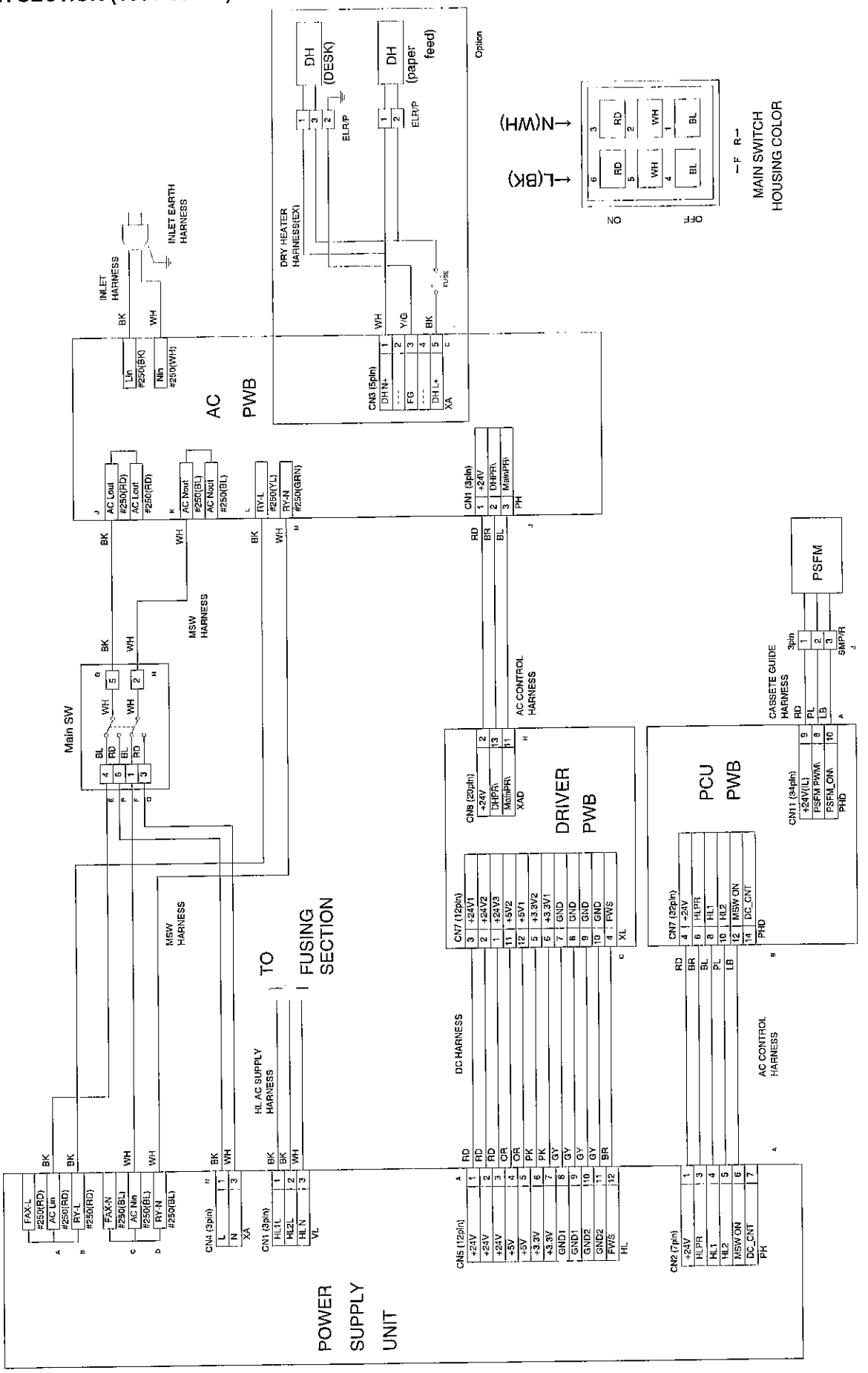

2/2
AC POWER LINE DIAGRAM (200V series)
MSW-OFF
125V 10A
NF
DCPS
HL1
HL2
PS_REACTOR
HL_REACTOR
MAIN SW
Optional
MainPR
RY1
RY2
DHSW
T2AH250V
DH PAPER
DH SCAN
DH DESK
RV1 470V
RV2 470V
F3 T2.5AH250V
F4 T2AH250V
C2 4700pF
C3 4700pF
F1 240V 10A
F2 240V 10A
AC100 PWB 200

3. DC power line diagram

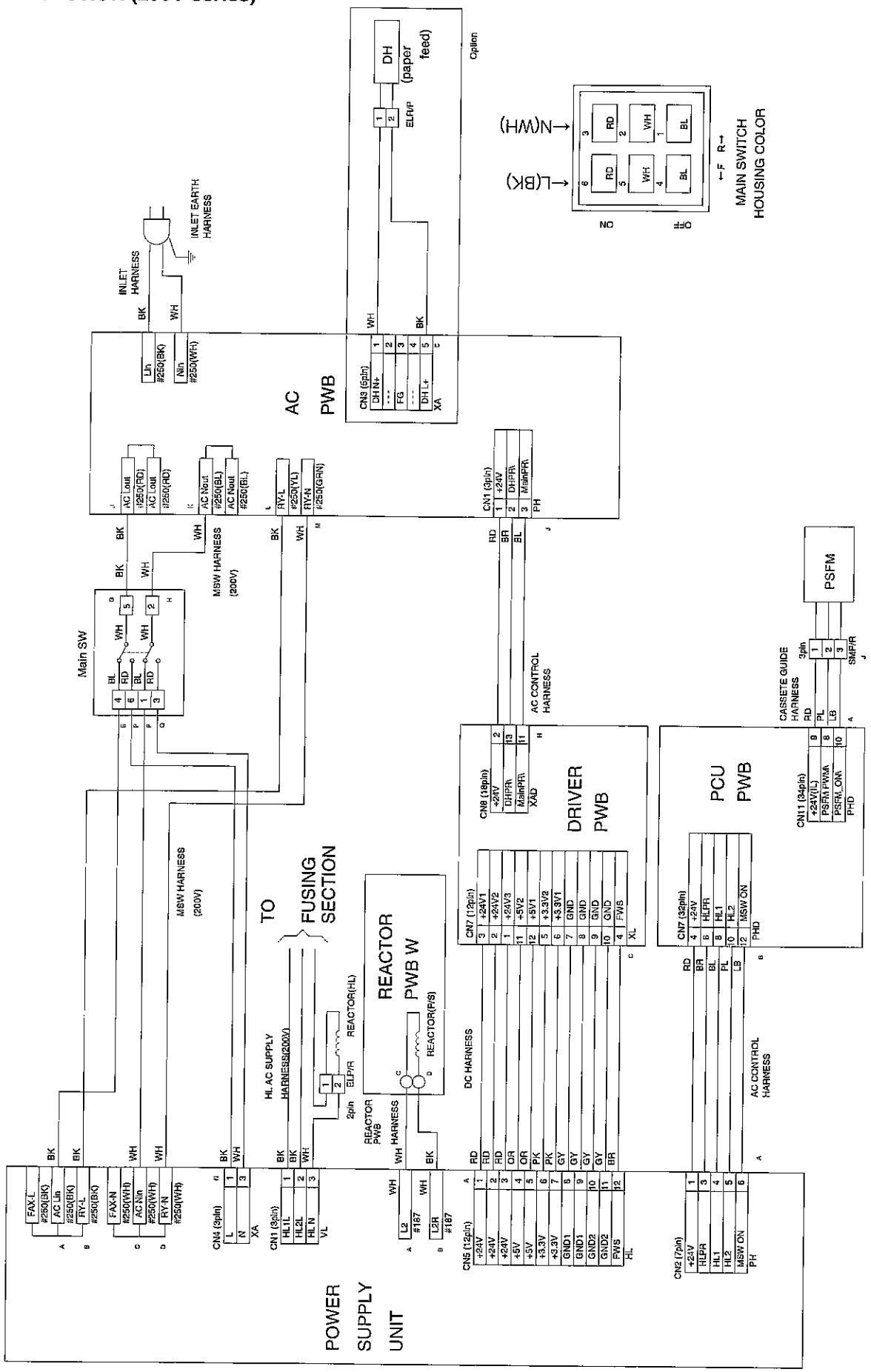


4. ACTUAL WIRING CHART

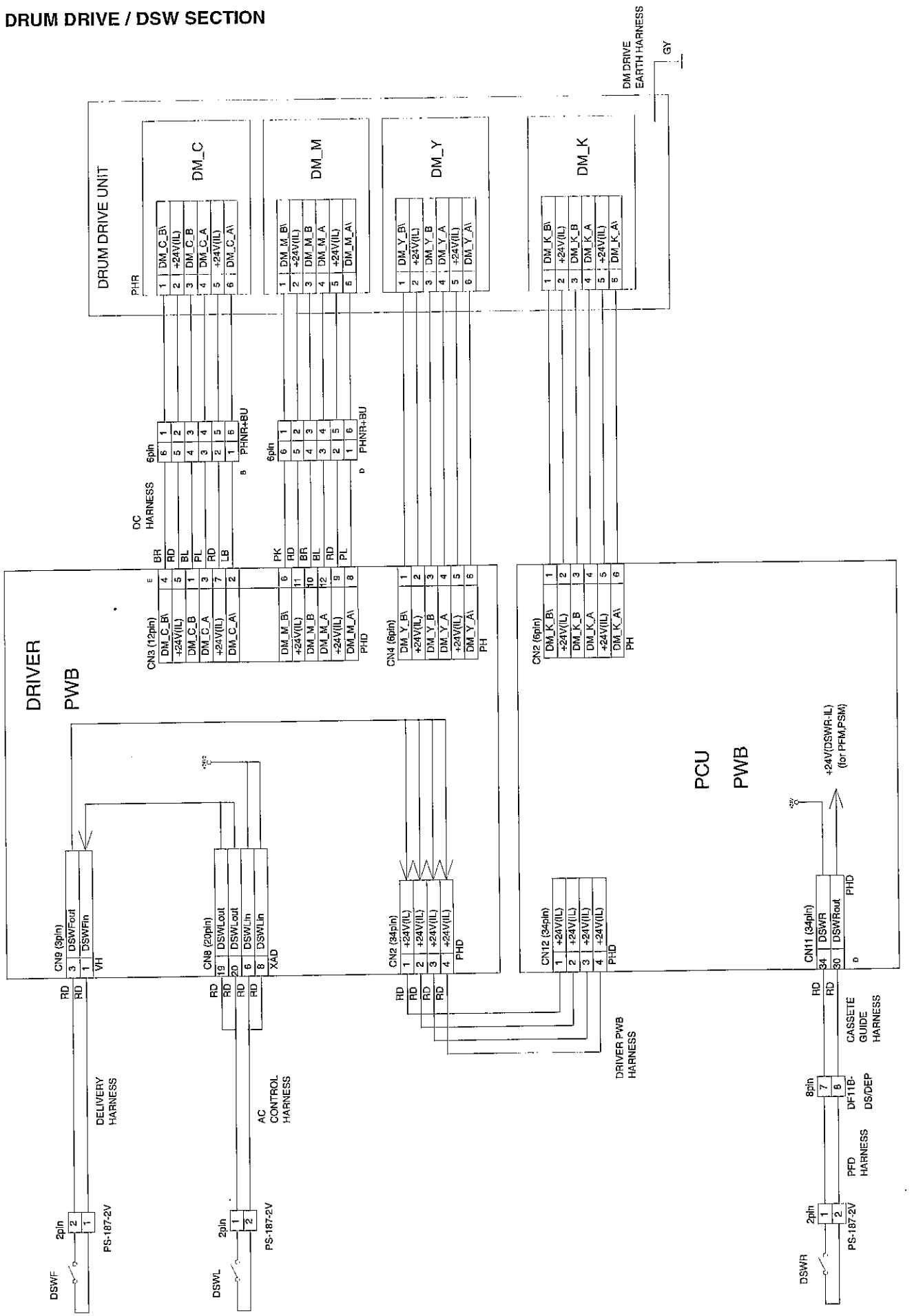
(1) POWER SECTION (100V series)



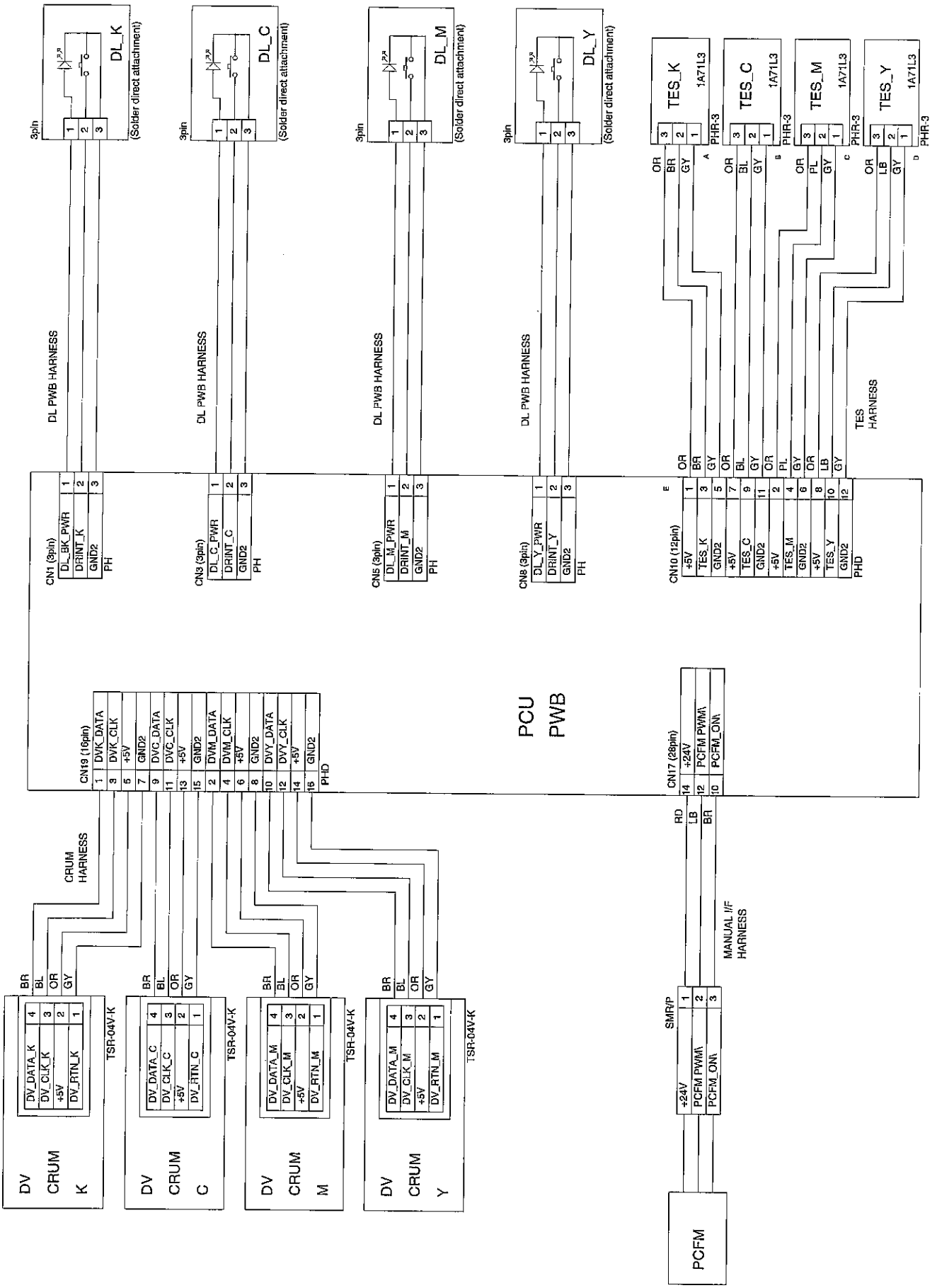
(1) POWER SECTION (200V series)



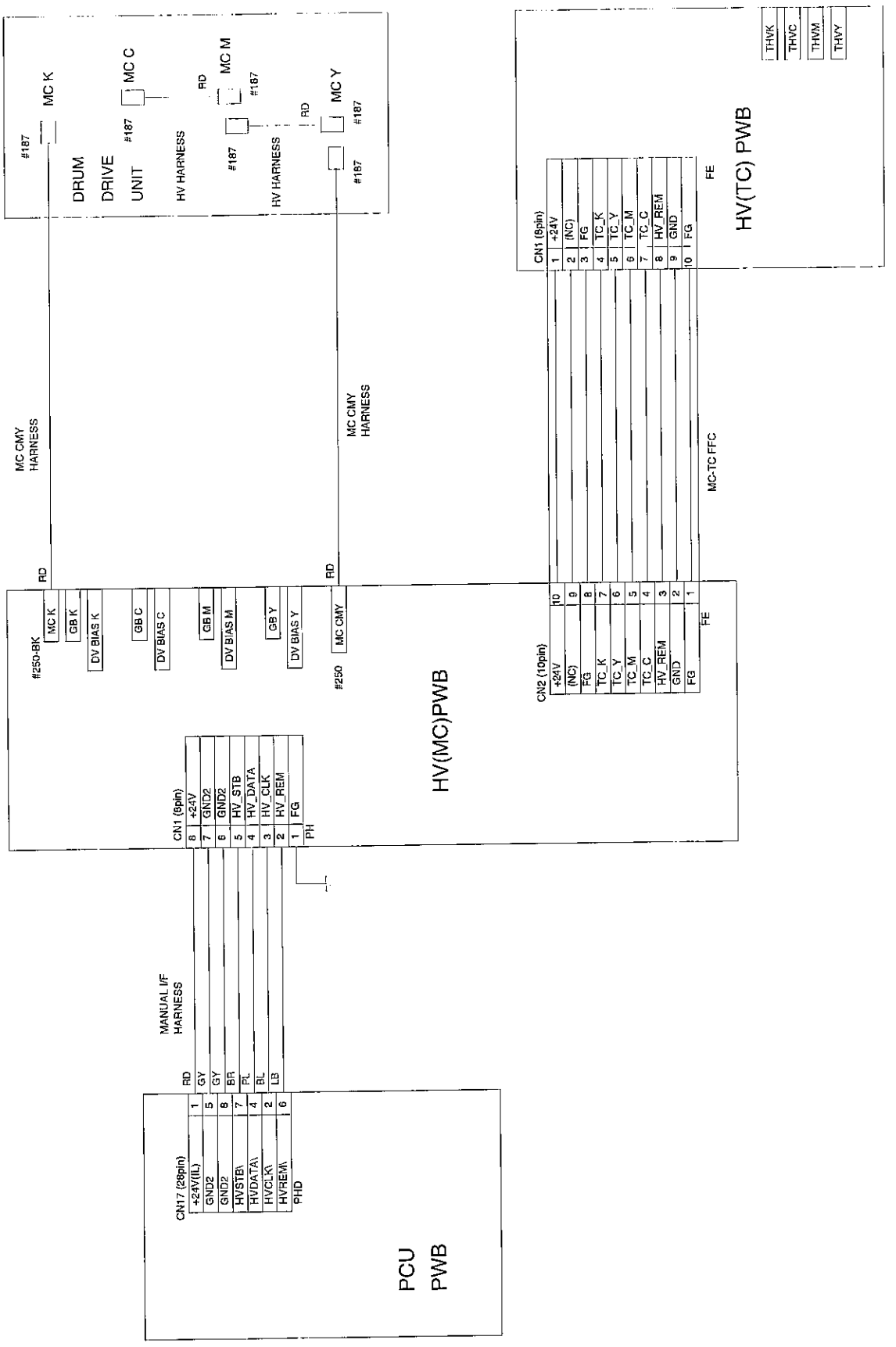
(2) DRUM DRIVE / DSW SECTION



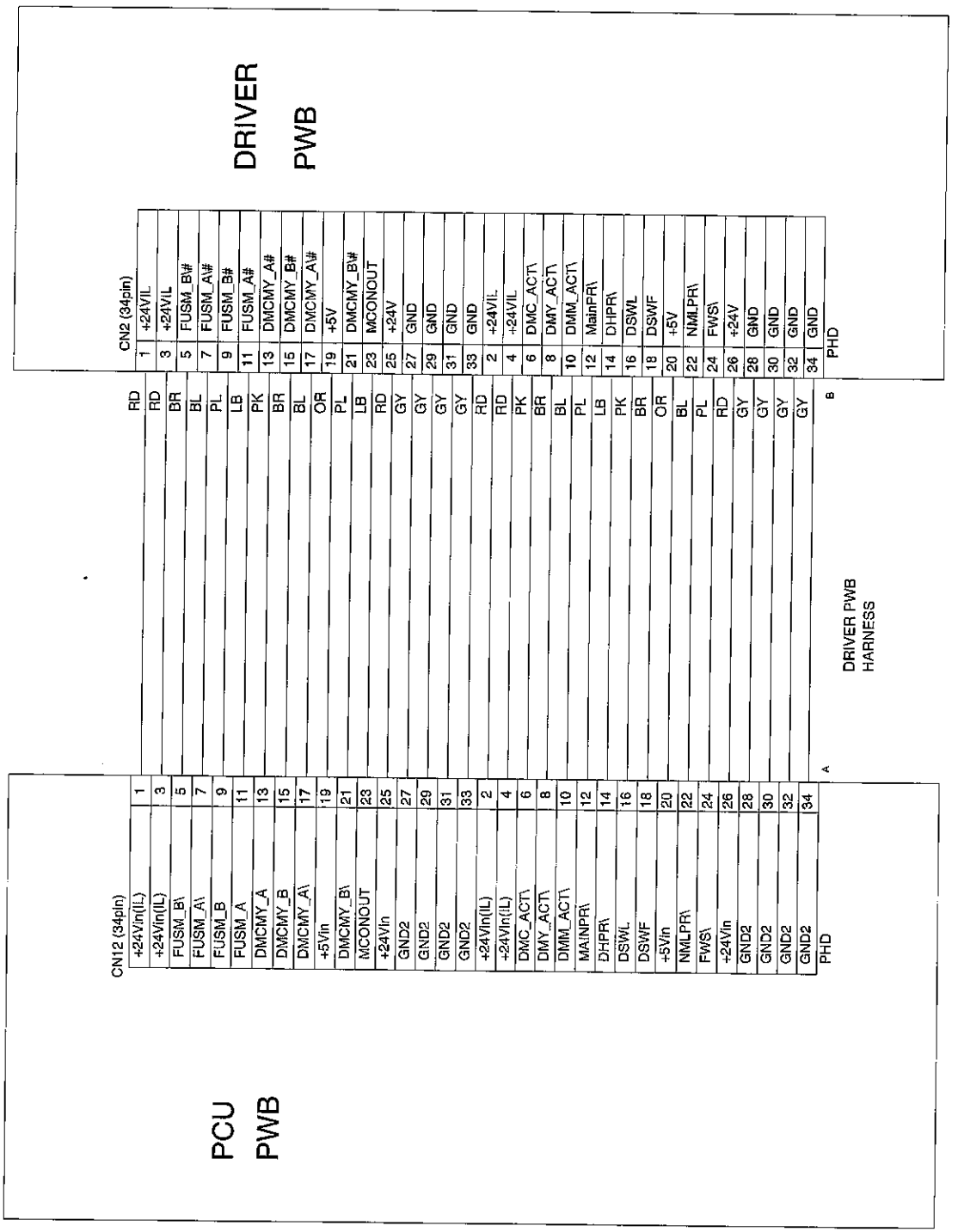
(3) IMAGE PROCESS SECTION



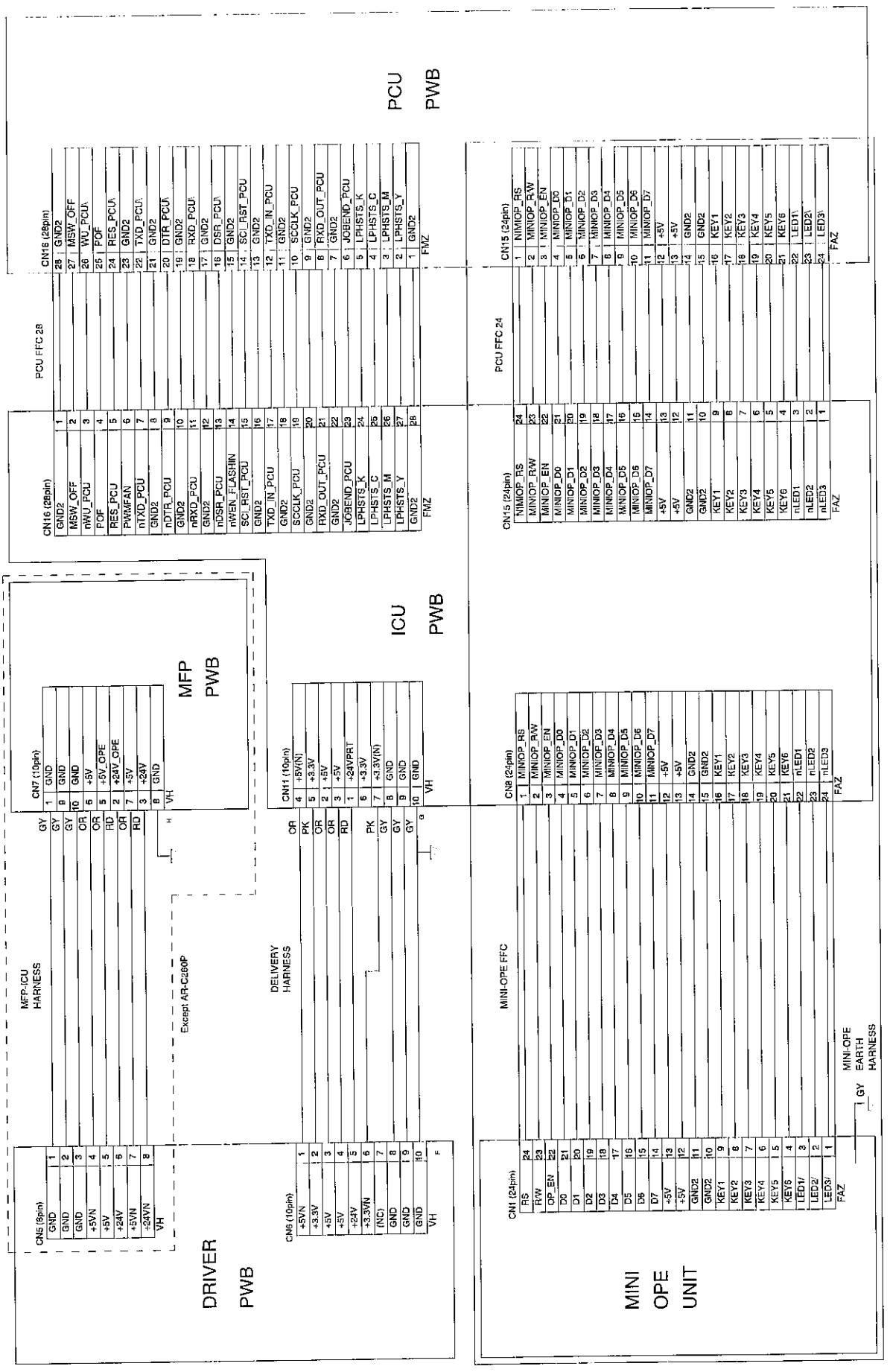
(4) HIGH VOLTAGE UNIT



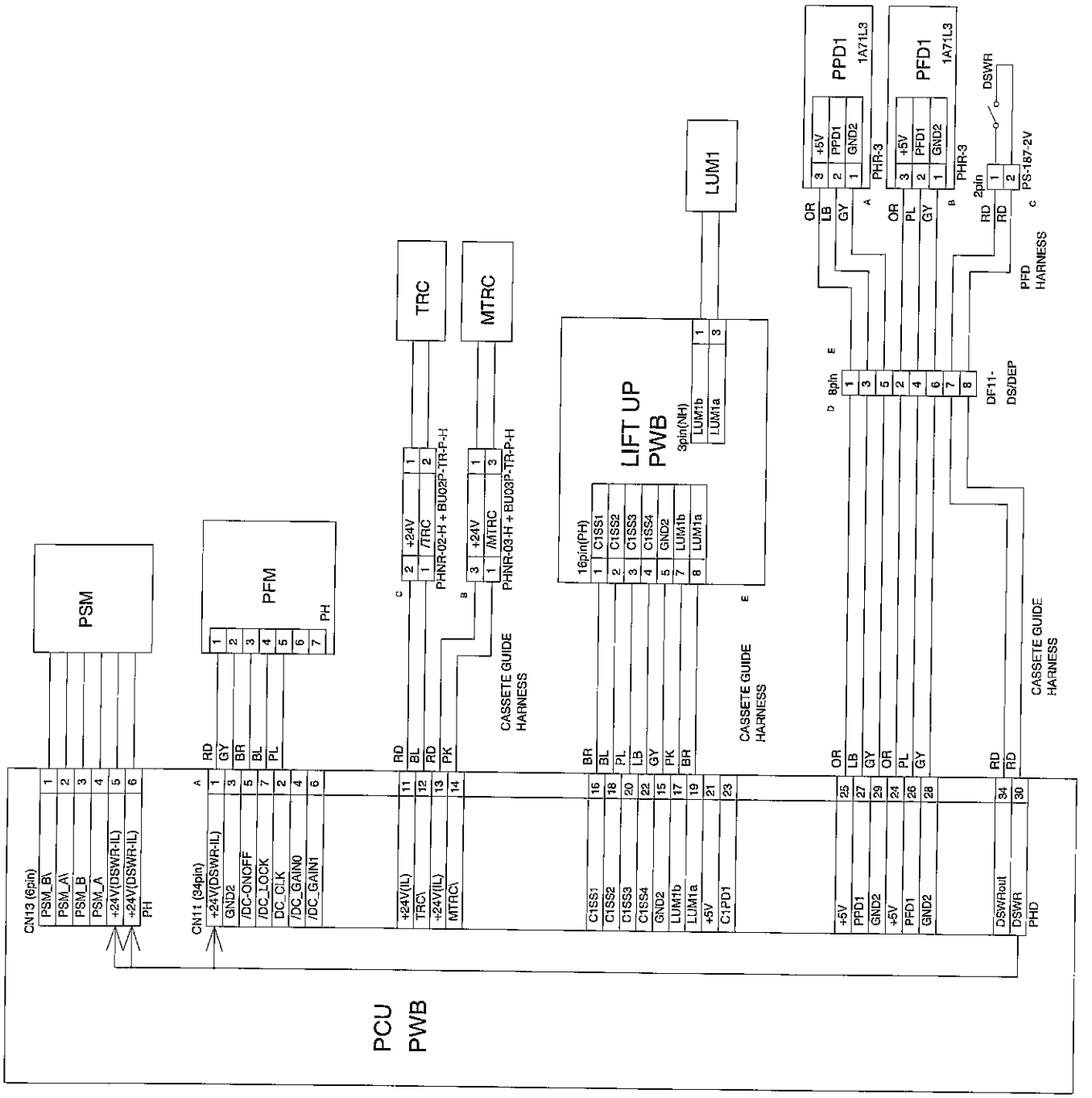
(5) MOTOR-DRIVER SECTION



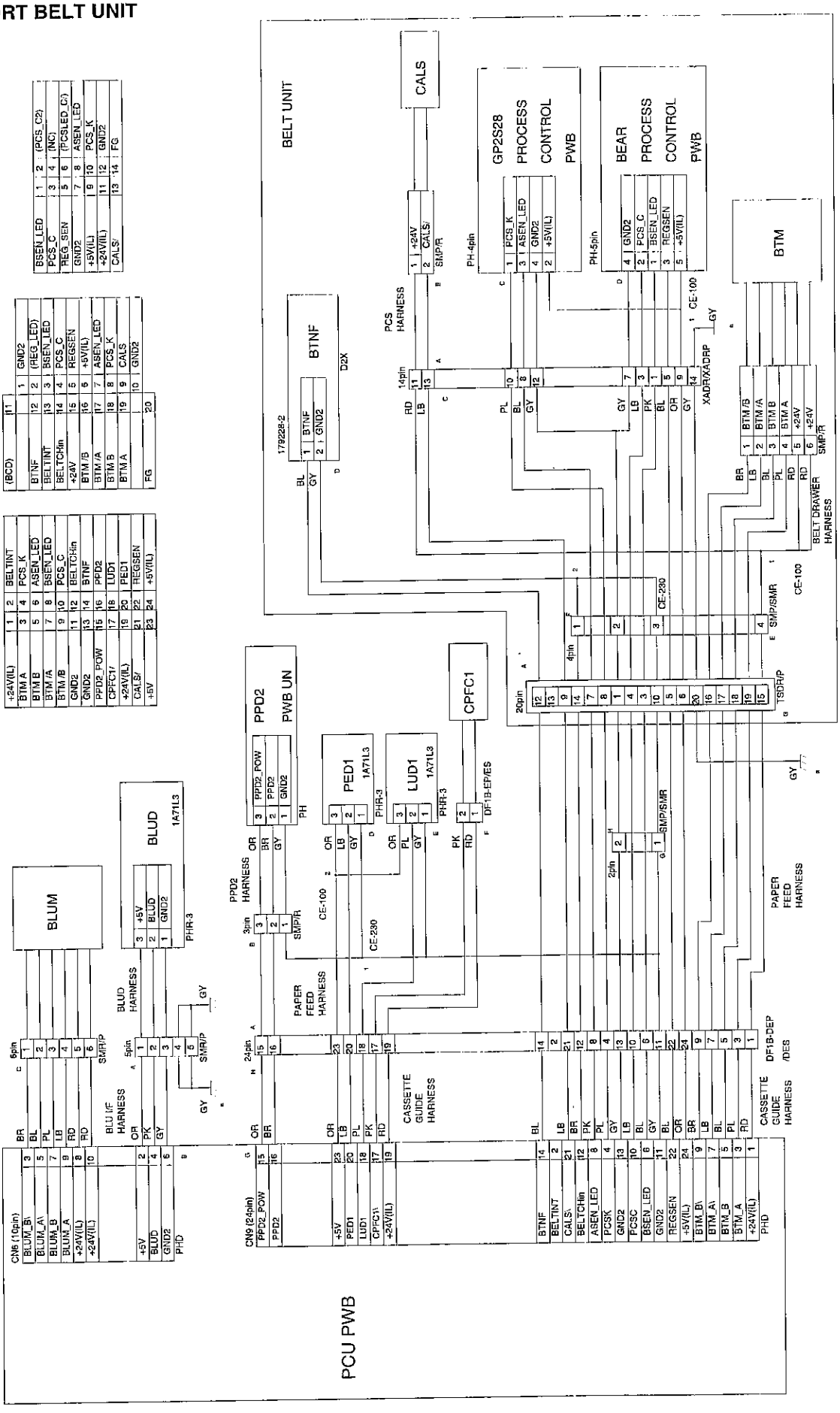
(6) PCU-ICU / MINI-OPE SECTION



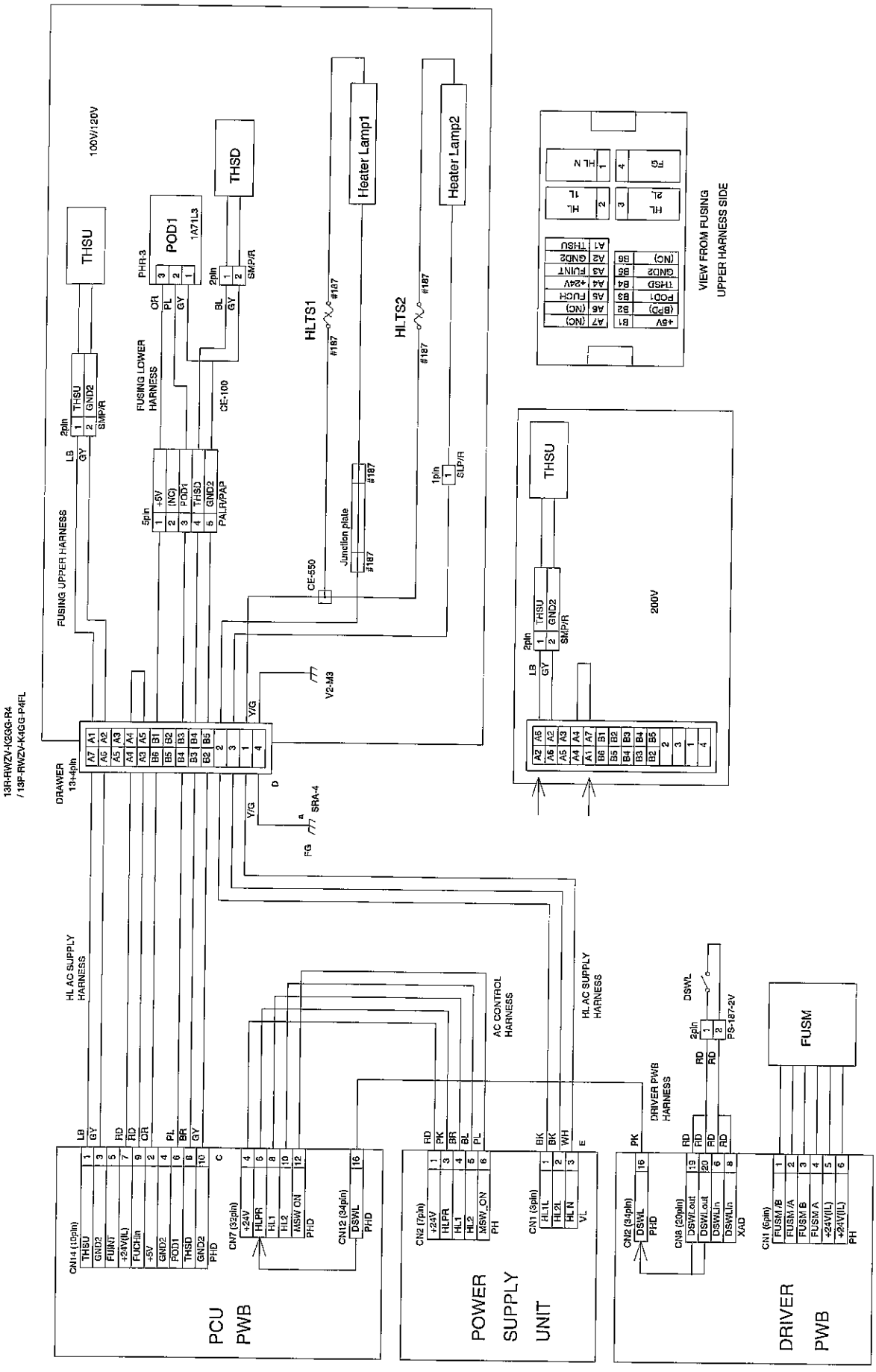
(7) TRANSPORT SECTION



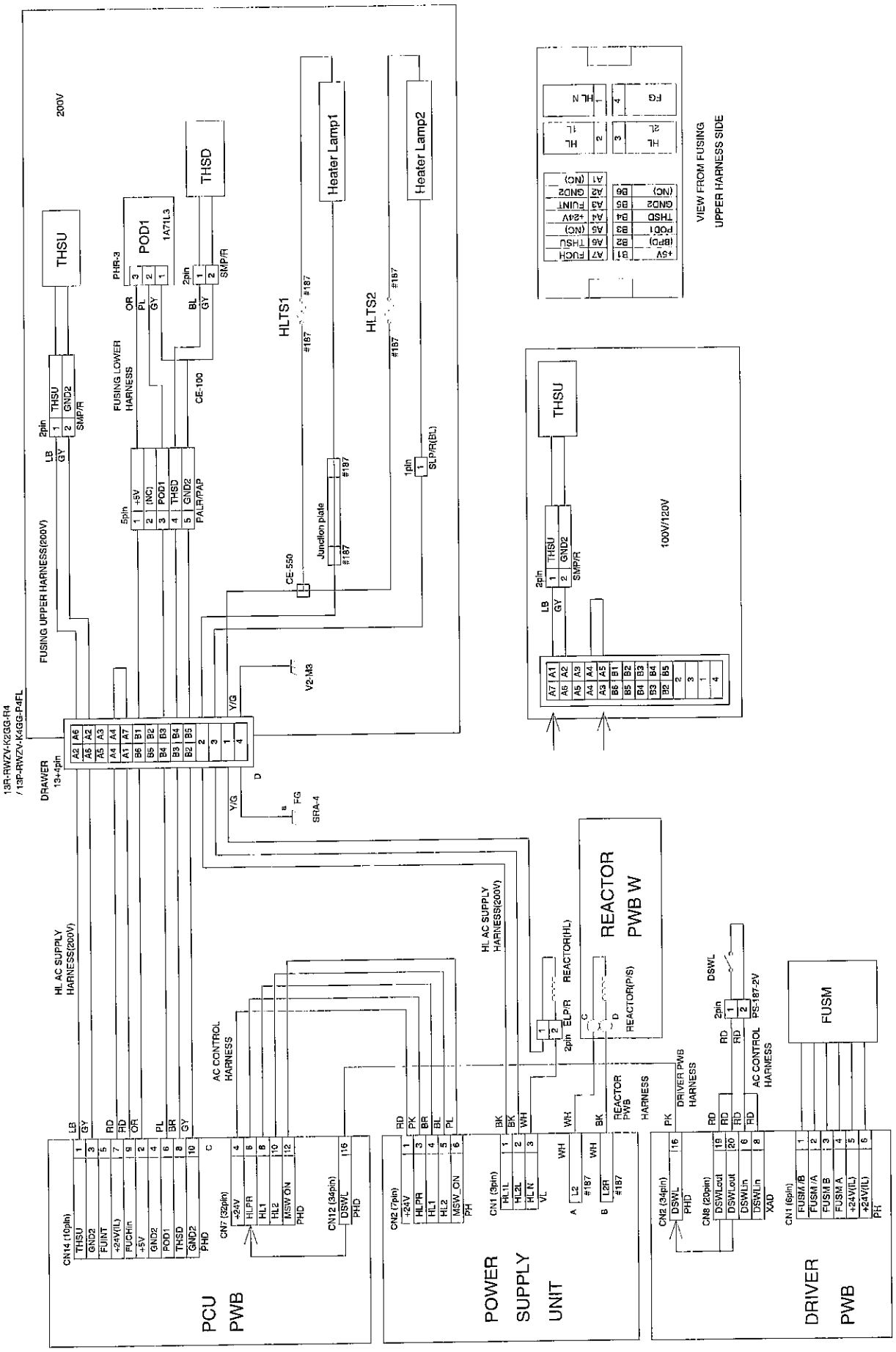
(8) TRANSPORT BELT UNIT



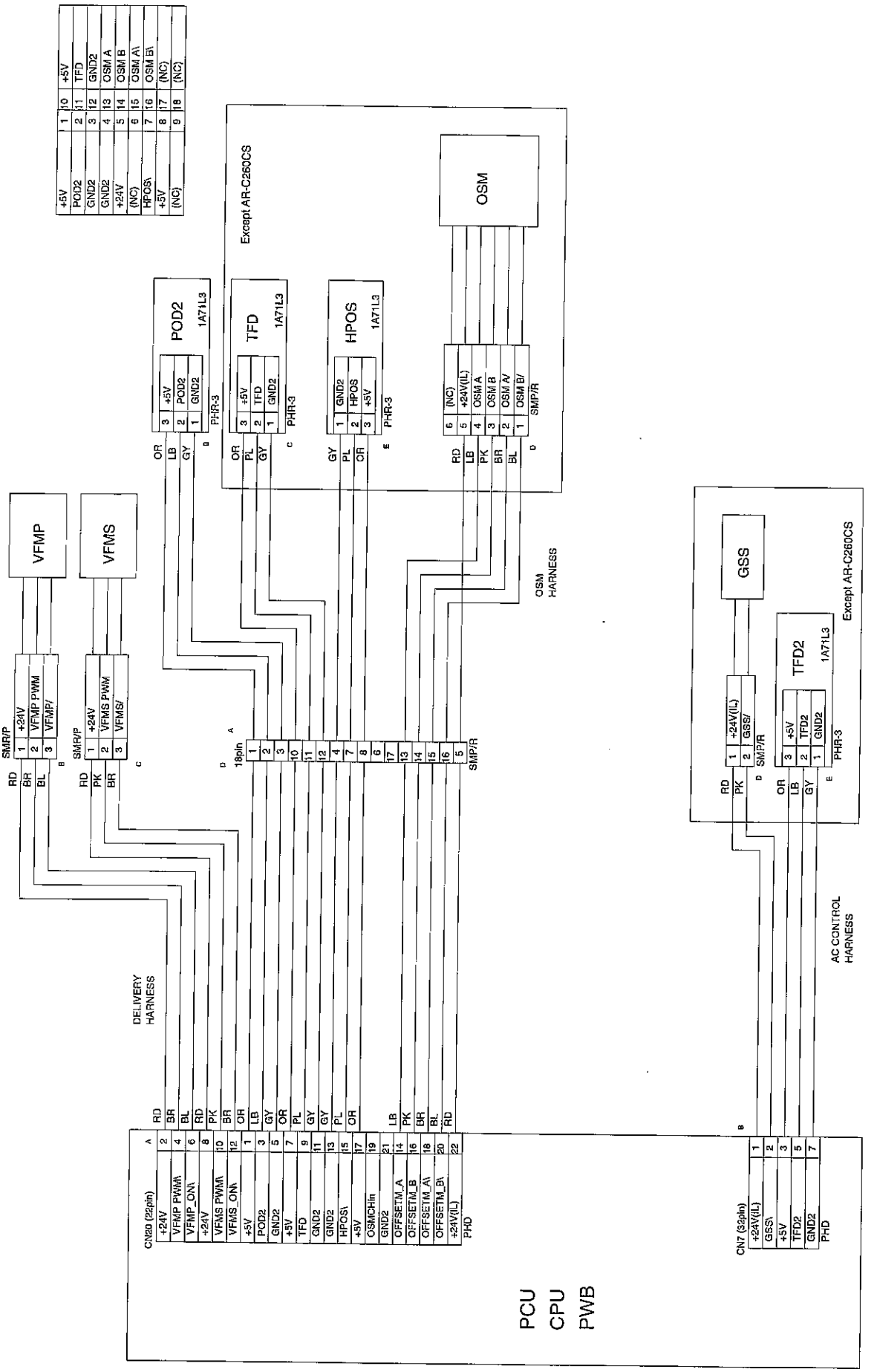
(9) FUSING UNIT (100V series)



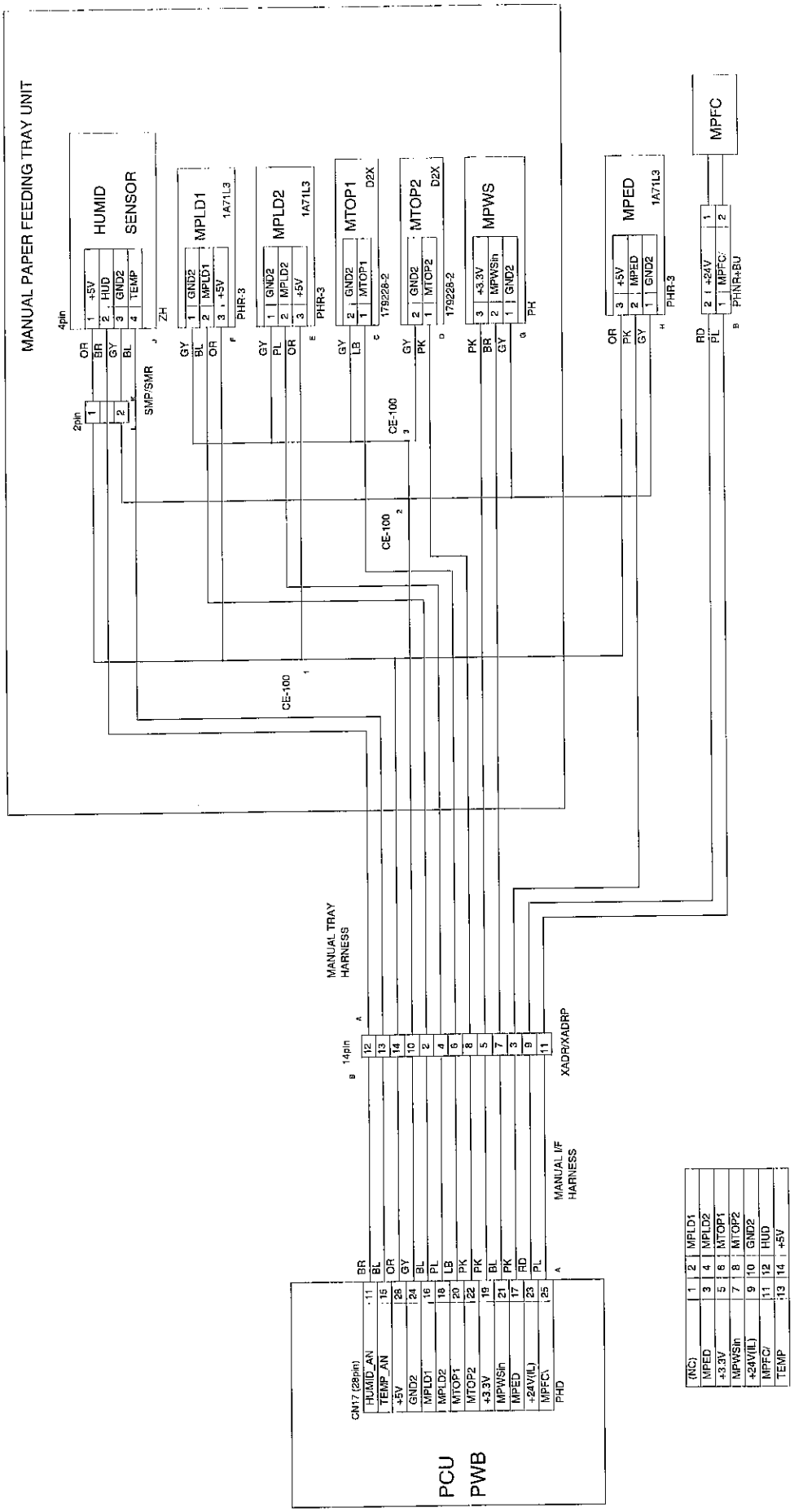
(9) FUSING UNIT (200V series)



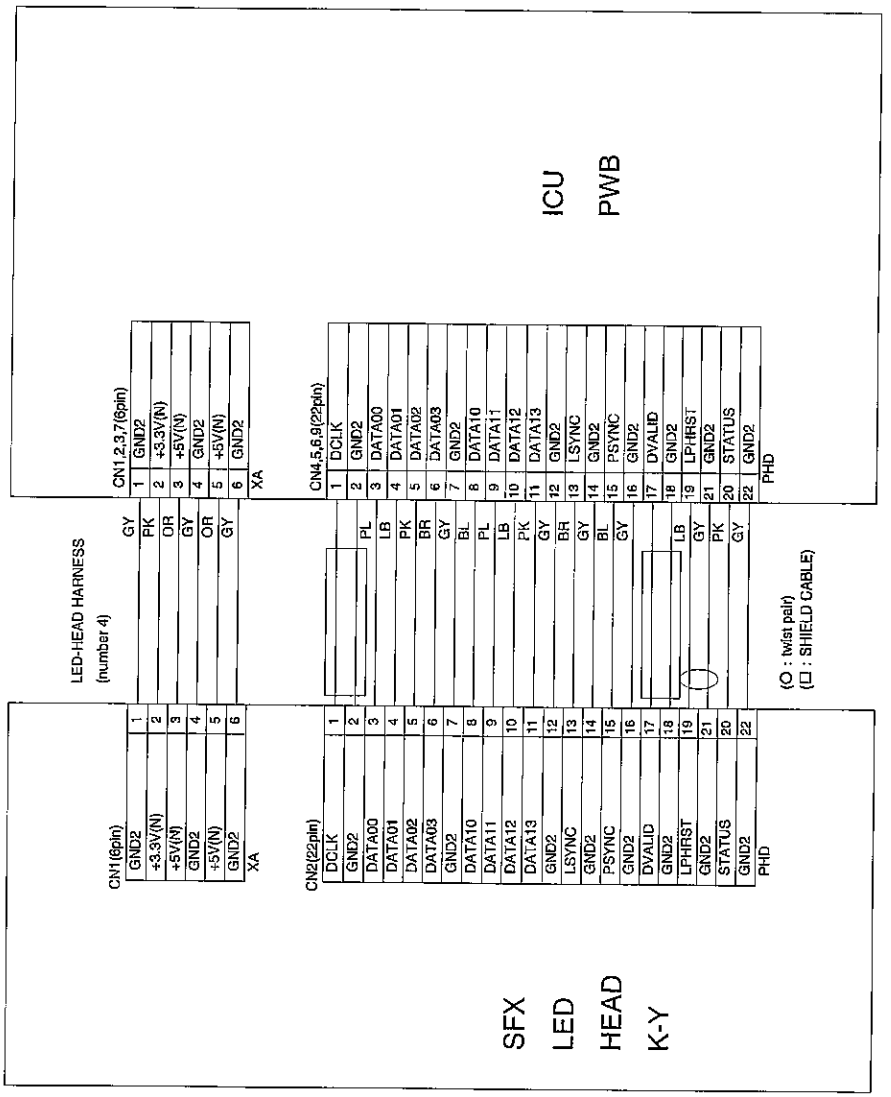
(10) PAPER EXIT SECTION



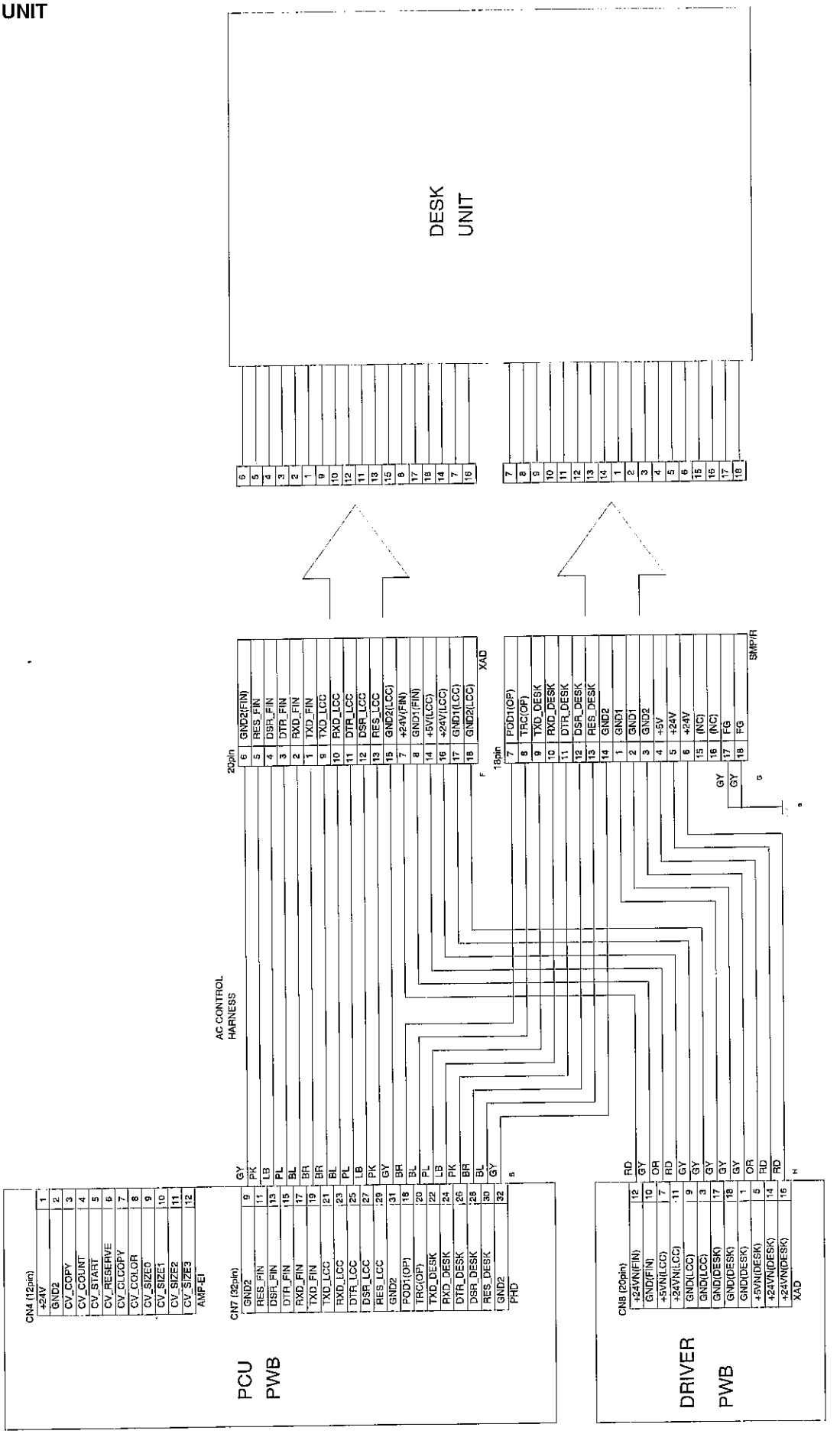
(11) MANUAL PAPER FEEDING



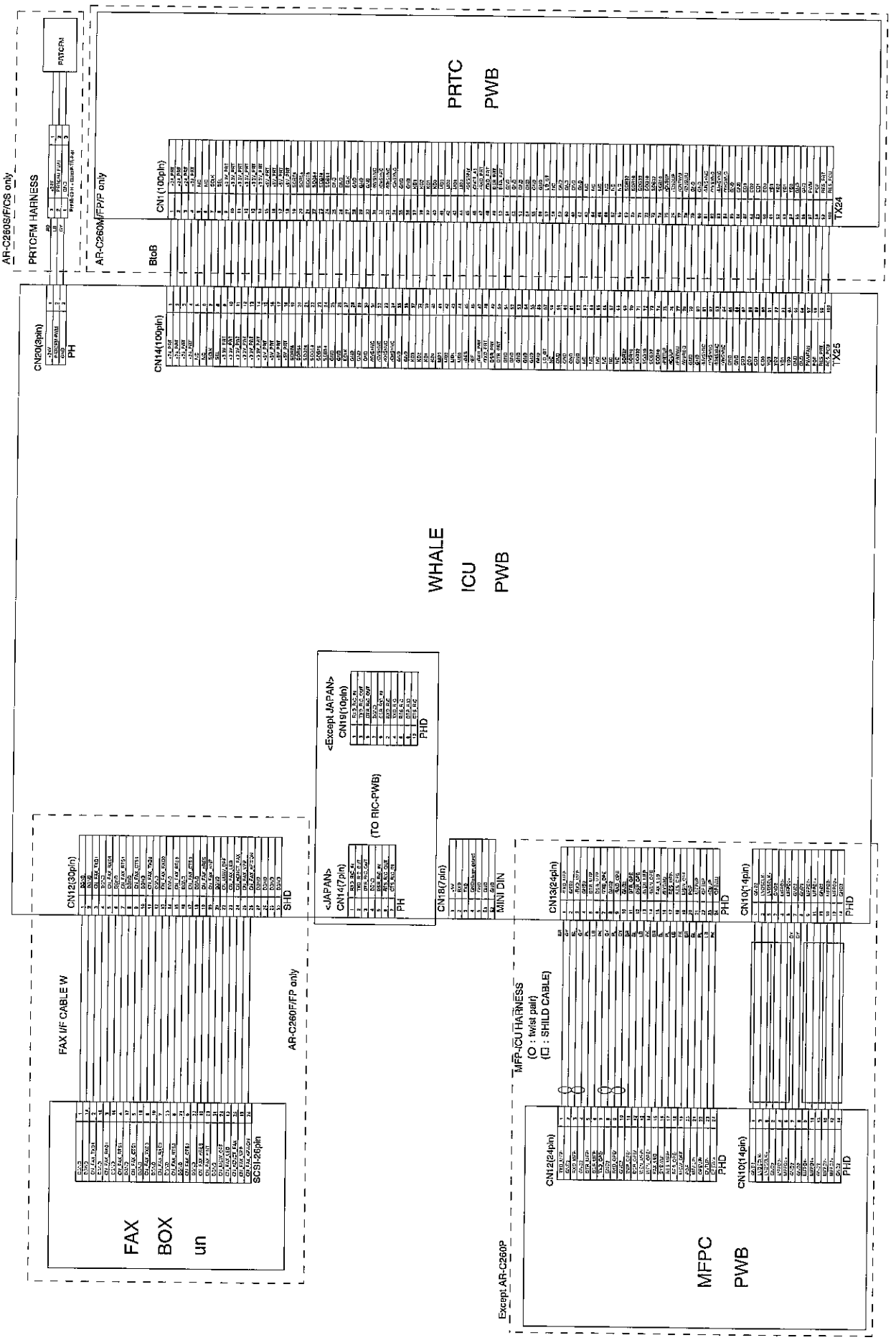
(12) LED-HEAD SECTION



(13) OPTION UNIT



(14) ICU SECTION



5. Signal list

Signal name	Name	Function/Operation	Section
APAM	Alignment motor	Aligns paper in ADU.	AR-D19
APHPS	Alignment plate home position detection	Detects the alignment plate in ADU.	AR-D19
APPD1	ADU transport sensor 1	Detects paper transport in ADU.	AR-D19
APPD2	ADU transport sensor 2	Detects paper transport in ADU.	AR-D19
ARHPS	Bundle roller HP sensor		AR-F13
AS	Alignment tray sensor		AR-F13
ATM	ADU transport motor	Drives the paper transport section in ADU.	AR-D19
ATRC	ADU transport clutch	Controls ON/OFF of the transport roller in ADU.	AR-D19
BDD	Door open detection 1	Detects upper door open.	AR-RB1
BDD2	Door open detection 2	Detects left door open.	AR-RB1
BES	Tray paper sensor		AR-F13
BGSOL	Gate solenoid	Switches straight or reverse paper exit.	AR-RB1
BIM	Paper entry motor	Transports paper in the paper entry section.	AR-RB1
BLUD	Belt lift-up upper limit detection	Detects if the transfer belt is lifted up or down.	Main machine
BLUM	Belt lift-up motor	Lifts the transfer belt unit.	Main machine
BPFD	Full sensor	Detects paper full on the tray.	AR-RB1
BPOD	Paper exit sensor	Detects paper exit.	AR-RB1
BPPD1	Transport sensor 1	Detects paper transport.	AR-RB1
BPPD2	Transport sensor 2	Detects paper transport.	AR-RB1
BPRD	Reverse section sensor	Detects paper presence in the reverse section.	AR-RB1
BRM	Upper reverse motor	Transports paper in the upper section.	AR-RB1
BTM	Transport belt motor	Drives the transfer belt.	Main machine
BTM	Lower reverse motor	Transports paper in the lower section.	AR-RB1
BTNF	Belt waste toner detection	Detects belt waste toner full.	Main machine
C1SS1	1 cassette paper size detection 1	Detects the paper size which is set by the paper size set block.	Main machine
C1SS2	1 cassette paper size detection 2	Detects the paper size which is set by the paper size set block.	Main machine
C1SS3	1 cassette paper size detection 3	Detects the paper size which is set by the paper size set block.	Main machine
C1SS4	1 cassette paper size detection 4	Detects the paper size which is set by the paper size set block.	Main machine
CALS	Calibration plate open/close solenoid	Switches image density sensors.	Main machine
CPFC1	Paper feed clutch	Transmits the paper feed motor power to each transport roller. (Controls ON/OFF.)	Main machine
DCSPSx	Paper remaining quantity sensor	Detects the remaining quantity of paper.	AR-D17/D18
DCSSx	Paper size sensor	Detects the paper size.	AR-D17/D18/D19
DDOPD	Door open sensor	Detects opening of the right door.	AR-D17/D18
DH	Dehumidifier heater	Dehumidifier heater for the machine cassette.	Main machine
DH (Japan only)	Dehumidifier heater 1	Dehumidifies the scanner section.	Main machine
DH (Japan only)	Dehumidifier heater 2	Dehumidifies the lens section.	Main machine
DHSW (Japan only)	Dehumidifier heater switch	Turns ON/OFF the power line of the dehumidifier heaters provided in the scanner (reading) section and the paper feed section.	Main machine
DLMx	Lift motor	Drives the lift plate.	AR-D17/D18/D19
DLUDx	Paper upper limit sensor	Detects the paper upper limit position.	AR-D17/D18/D19
DM	Paper feed drive motor	Drives the paper feed section and the paper transport section.	AR-D17/D18/D19
DM_C	Drum motor (C)	Drives the Cyan photoconductor unit.	Main machine
DM_K	Drum motor (K)	Drives the Black photoconductor unit.	Main machine
DM_M	Drum motor (M)	Drives the Magenta photoconductor unit.	Main machine
DM_Y	Drum motor (Y)	Drives the Yellow photoconductor unit.	Main machine
DPEDx	Paper empty sensor	Detects paper presence on the paper tray.	AR-D17/D18/D19
DPFCx	Paper feed clutch	Controls ON/OFF of the paper feed roller.	AR-D17/D18/D19
DPFSx	Pickup solenoid	Presses the paper pickup roller onto paper.	AR-D17/D18/D19
DPPD1	Paper transport sensor 1	Detects paper transport.	AR-D17/D18/D19
DPPD2	Paper transport sensor 2	Detects paper transport.	AR-D17/D18
DPPD3	Paper transport sensor 3	Detects paper transport.	AR-D17/D18
DSWF	Front door open detection	Detects opening of the front door.	Main machine
DSWL	Paper exit door open detection	Detects opening of the paper exit door.	Main machine
DSWR	Paper feed door open detection	Detects opening of the paper feed door.	Main machine
DTRC	Transport clutch	Controls ON/OFF of the transport roller.	AR-D17/D18/D19
DUSTPTR	Punch dust full sensor	Detects punch dust full.	AR-F13
ES	Entry port sensor		AR-F13
FAM	Bundle exit sensor		AR-F13
FDS	Front door sensor		AR-F13
FDSW	Front door switch		AR-F13
FE	Bookbinding clock sensor		AR-F13

Signal name	Name	Function/Operation	Section
FES	Bookbinding paper senor		AR-F13
FFJM	Alignment motor (F)		AR-F13
FFM	Transport motor		AR-F13
FFSM	Stapler/Folding motor staple operation/ Paper folding operation		AR-F13
FHPS	Bookbinding HP sensor		AR-F13
FJHPS	Alignment HP sensor		AR-F13
FLM	Shift motor		AR-F13
FPM	Paddle motor oscillation guide drive, discharge to offset tray		AR-F13
FPNM	Punch motor		AR-F13
FPS	Bookbinding position sensor		AR-F13
FPSM	Puncher side registration motor		AR-F13
FRHPS	Bookbinding roller HP sensor		AR-F13
FRJM	Alignment motor (R)		AR-F13
FSM	Slide motor staple unit shift		AR-F13
FUSM	Fusing drive motor	Drives the fusing unit.	Main machine
GSS	Face up/down switch gate solenoid	Drives the face-up/down switch gate.	Main machine
HLTS1	Upper heat roller thermostat	Detects an abnormally high temperature to turn off the heater lamp.	Main machine
HLTS2	Lower heat roller thermostat	Detects an abnormally high temperature to turn off the heater lamp.	Main machine
HPOS	Offset home position sensor	Detects the offset home position.	Main machine
HUD	Humidity sensor	Detects the humidity.	Main machine
JS	Joint switch		AR-F13
LDD	Lower limit detector		AR-LC5
LE	Lift lock sensor		AR-F13
LEDONx	Paper size sensor	Detects the paper size.	AR-F13
LLLS	Lift lower limit sensor		AR-F13
LLM	Lift-up motor		AR-LC5
LLSW	Upper limit lock switch		AR-LC5
LPED	Paper detector		AR-LC5
LPFC	Paper clutch		AR-LC5
LPFD	Transport detector		AR-LC5
LPFM	Paper feed and transport motor		AR-LC5
LPFS	Pick-up solenoid		AR-LC5
LRES	Encoder sensor		AR-LC5
LTOD	Copier connection detector		AR-LC5
LTRC	Paper feed clutch		AR-LC5
LUD	Upper limit detector		AR-LC5
LUD1	1 cassette lift-up upper limit detection	Detects the paper upper limit position.	Main machine
LUM1	1 cassette lift-up motor	Drives the lift plate.	Main machine
MPED	Manual feed paper empty sensor	Detects paper presence on the paper tray.	Main machine
MPFC	Manual paper feed clutch	Controls ON/OFF of the paper feed roller. Presses the paper pickup roller onto paper.	Main machine
MPLD1	Manual paper length detection 1	Detects the paper length.	Main machine
MPLD2	Manual paper length detection 2	Detects the paper length.	Main machine
MPWS	Manual paper width detection	Detects the paper width.	Main machine
MSW	Main switch	Turns ON/OFF the main power.	Main machine
MTOP1	Manual tray pull-out detection 1	Detects the paper tray position.	Main machine
MTOP2	Manual tray pull-out detection 2	Detects the paper tray position.	Main machine
MTRC	Manual feed drive clutch	Transmits drive power to the manual paper feed unit.	Main machine
OBHPS	Paper exit belt HP sensor		AR-F13
OSM	Offset motor (Slide motor)	Drives the paper offset.	Main machine
PCFM	Process cooling fan motor	Exhaust and cools the process section.	Main machine
PCS_C	Color toner concentration (process control) sensor	Detects the toner patch density (color toner) in image density correction.	Main machine
PE	Punch motor encoder		AR-F13
PED1	1 cassette paper empty detection	Detects paper presence on the paper tray.	Main machine
PFD1	1 cassette paper feed detection	Detects paper delivery from No. 1 paper tray.	Main machine
PFM	Paper feed motor	Drives the paper feed section and the paper transport section.	Main machine
PHPS	Paddle HP sensor		AR-F13
POD1	Machine paper exit sensor 1	Detects discharged paper.	Main machine
POD2	Machine paper exit sensor 2	Detects discharged paper.	Main machine
PPD1	No. 1 paper transport sensor	Detects paper in front of the resist roller.	Main machine

Signal name	Name	Function/Operation	Section
PPD2	PS front sensor	Detects paper in front of PS.	Main machine
PSFM	Power UN cooling fan motor	Cools the power unit.	Main machine
PSHPS	Punch side registration home position		AR-F13
PSM	PS motor	Drives the resist roller and controls ON/OFF.	Main machine
PUNCH	Punch home position		AR-F13
PWMFAN_ICU	Printer controller cooling fan motor	Cools the printer controller.	Main machine
RJHPS	Alignment HP sensor R		AR-F13
SHPS	Slide HP sensor		AR-F13
SLS	Paper surface sensor		AR-F13
SPS	Staple sensor	Detects staple empty.	AR-F13
SS	Staple cartridge sensor	Detects installation of a staple cartridge.	AR-F13
SSS	Stapler safety switch		AR-F13
STHPS	Stapler HP sensor		AR-F13
TCS	Upper cover sensor		AR-F13
TES_C	Toner empty sensor (C)	Detects toner empty (C).	Main machine
TES_K	Toner empty sensor (K)	Detects toner empty (K).	Main machine
TES_M	Toner empty sensor (M)	Detects toner empty (M).	Main machine
TES_Y	Toner empty sensor (Y)	Detects toner empty (Y).	Main machine
TFD2	Paper exit tray full detection	Detects face-down paper exit tray full.	Main machine
TFD2	Face-up paper exit tray full detection	Detects face-up paper exit tray full.	Main machine
THSD	Lower heat roller thermistor	Detects the temperature on the heat roller surface.	Main machine
THSU	Upper heat roller thermistor	Detects the temperature on the heat roller surface.	Main machine
TRC	PS front clutch	Transmits the paper feed motor power to the manual transport roller. (Controls ON/OFF.)	Main machine
ULS	Lift upper limit sensor		AR-F13
VFMP	Exhaust fan motor 1	Exhaust and cools the fusing section.	Main machine
VFMS	Exhaust fan motor 2	Exhaust and cools the fusing section.	Main machine

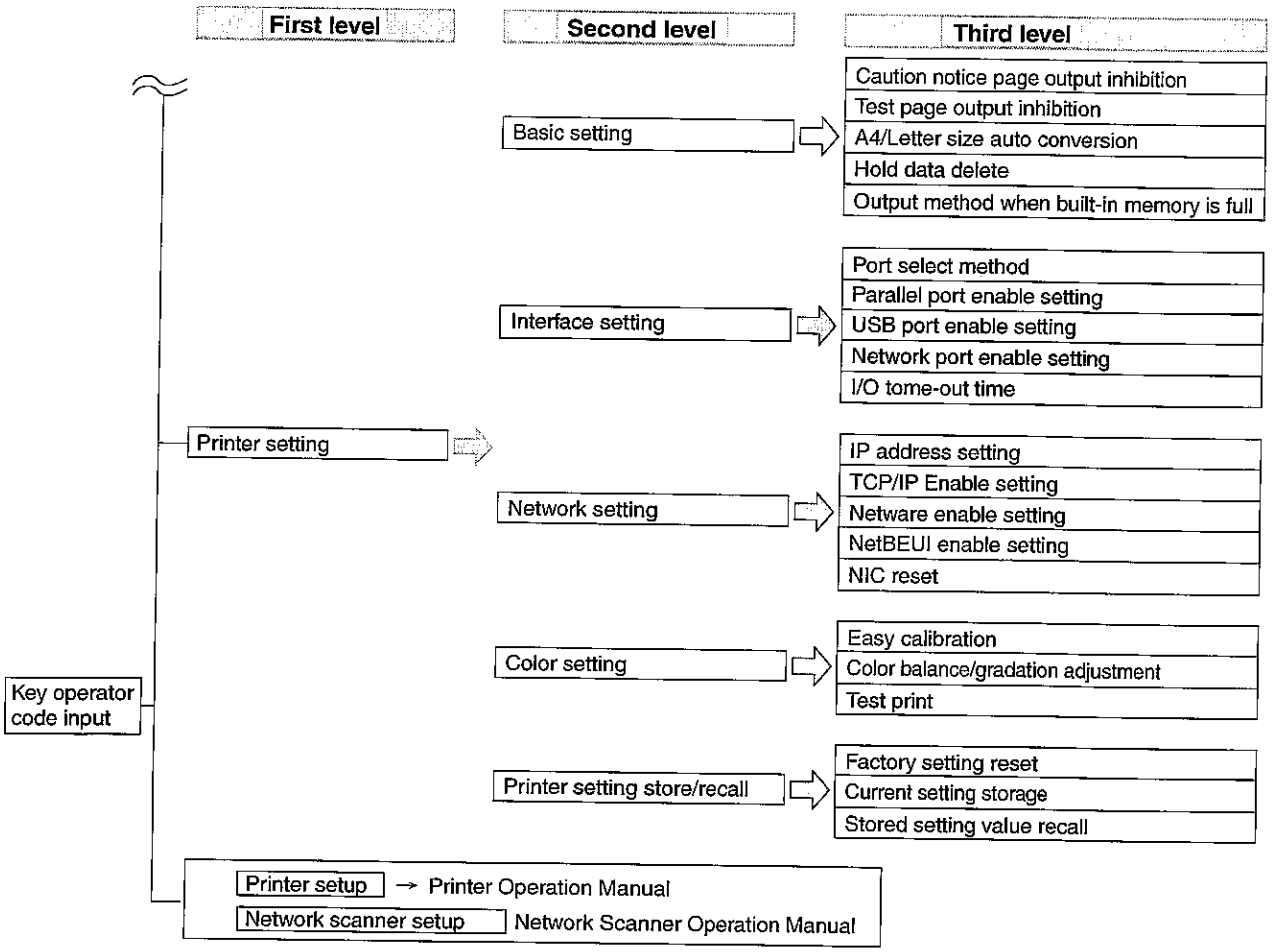
[14] OTHERS

1. Key operator program

A. Classification of set items

The set items of the key operator program are classified into the following three levels:

* Some items have further lower levels (set menus).



2. Special tools

No	Name	Part code	Purpose	Note
1	Service color test chart for printer	UKOG-0305FCZZ		New
2	Image density sensor adjustment jig	CPLTM6305FC01	Used to adjust the image density sensor. (Plate with calibration sheet)	New
		TLABZ4843FCZZ	Calibration sheet	New (for replacement)
3	Extension cable for measure high voltage	DHAi-3471FCZZ	Used to check the MC grid and DV bias voltage (Color)	New
4		DHAi-3472FCZZ	Used to check the MC grid and DV bias voltage (Black)	New
5	Starting powder	UKOG-0123FCZZ	Used to reduce friction between the transfer belt and the transfer belt cleaning blade.	
6	Cleaning cloth	UKOG-0289FCZZ	Used to clean the optical system. Wash to reuse.	
7	Level converter	UKOG-0002QSZZ (with serial cable)	Used to download the FLASH ROM program from a PC to the FLASH ROM on the machine.	Commercially available serial cable can be used.
		UKOG-0003QSZZ (without serial cable)		
8	FLASH ROM download program file	Mainte_xxxx.exe	Download (upgrade) the FLASH ROM program for main body section	
9		WDskxxx_d.pgm	Download (upgrade) the FLASH ROM program for Desk unit	
10	Spare FLASH ROM		FLASH ROM (16Mbit x 2) 1pc	The type (capacity) of Flash ROM is determined depending on the kind of Flash ROM (in the PCU PWB, in the ICU PWB, Printer control PWB or in the operation control PWB).
11			FLASH ROM (16Mbit) 1pc	
12			FLASH ROM (8Mbit) 2pcs	
13			FLASH ROM (32Mbit x 2) 2pcs	
14	Magnifying glass		Picture quality check (Mainly the color registration is checked.)	Purchase a commercially available one. (Magnification ratio:20 - 25)

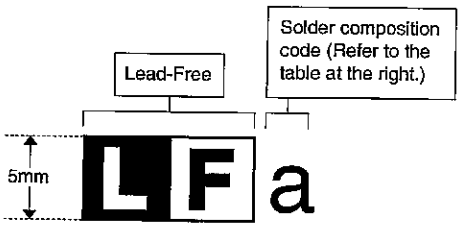
Memo

Memo

LEAD-FREE SOLDER

The PWB's of this model employs lead-free solder. The "LF" marks indicated on the PWB's and the Service Manual mean "Lead-Free" solder.
The alphabet following the LF mark shows the kind of lead-free solder.

Example:



<Solder composition code of lead-free solder>

Solder composition	Solder composition code
Sn-Ag-Cu	a
Sn-Ag-Bi Sn-Ag-Bi-Cu	b
Sn-Zn-Bi	z
Sn-In-Ag-Bi	i
Sn-Cu-Ni	n
Sn-Ag-Sb	s
Bi-Sn-Ag-P Bi-Sn-Ag	p

(1) NOTE FOR THE USE OF LEAD-FREE SOLDER THREAD

When repairing a lead-free solder PWB, use lead-free solder thread.
Never use conventional lead solder thread, which may cause a breakdown or an accident.
Since the melting point of lead-free solder thread is about 40°C higher than that of conventional lead solder thread, the use of the exclusive-use soldering iron is recommendable.

(2) NOTE FOR SOLDERING WORK

Since the melting point of lead-free solder is about 220°C, which is about 40°C higher than that of conventional lead solder, and its soldering capacity is inferior to conventional one, it is apt to keep the soldering iron in contact with the PWB for longer time. This may cause land separation or may exceed the heat-resistive temperature of components. Use enough care to separate the soldering iron from the PWB when completion of soldering is confirmed.
Since lead-free solder includes a greater quantity of tin, the iron tip may corrode easily. Turn ON/OFF the soldering iron power frequently.
If different-kind solder remains on the soldering iron tip, it is melted together with lead-free solder. To avoid this, clean the soldering iron tip after completion of soldering work.
If the soldering iron tip is discolored black during soldering work, clean and file the tip with steel wool or a fine filer.

CAUTION FOR BATTERY REPLACEMENT

(Danish) ADVARSEL !
Lithiumbatteri – Eksplosionsfare ved fejlagtig håndtering.
Udskiftning må kun ske med batteri
af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandoren.

(English) Caution !
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type
recommended by the manufacturer.
Dispose of used batteries according to manufacturer's instructions.

(Finnish) VAROITUS
Paristo voi räjähtää, jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan
tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden
mukaisesti.

(French) ATTENTION
Il y a danger d'explosion s' il y a remplacement incorrect
de la batterie. Remplacer uniquement avec une batterie du
même type ou d'un type équivalent recommandé par
le constructeur.
Mettre au rebut les batteries usagées conformément aux
instructions du fabricant.

(Swedish) VARNING
Explosionsfara vid felaktigt batteribyte.
Använd samma batterityp eller en ekvivalent
typ som rekommenderas av apparattillverkaren.
Kassera använt batteri enligt fabrikantens
instruktion.

(German) Achtung
Explosionsgefahr bei Verwendung inkorrekter Batterien.
Als Ersatzbatterien dürfen nur Batterien vom gleichen Typ oder
vom Hersteller empfohlene Batterien verwendet werden.
Entsorgung der gebrauchten Batterien nur nach den vom
Hersteller angegebenen Anweisungen.

CAUTION FOR BATTERY DISPOSAL

(For USA, CANADA)

"BATTERY DISPOSAL"
THIS PRODUCT CONTAINS A LITHIUM PRIMARY (MANGANESS DIOXIDE) MEMORY BACK-UP BATTERY THAT MUST BE DISPOSED OF PROPERLY. REMOVE THE BATTERY FROM THE PRODUCT AND CONTACT YOUR LOCAL ENVIRONMENTAL AGENCIES FOR INFORMATION ON RECYCLING AND DISPOSAL OPTIONS.

"TRAITEMENT DES PILES USAGÉES"
CE PRODUIT CONTIENT UNE PILE DE SAUVEGARDE DE MÉMOIRE LITHIUM PRIMAIRE (DIOXYDE DE MANGANÈSE) QUI DOIT ÊTRE TRAITÉE CORRECTEMENT. ENLEVEZ LA PILE DU PRODUIT ET PRENEZ CONTACT AVEC VOTRE AGENCE ENVIRONNEMENTALE LOCALE POUR DES INFORMATIONS SUR LES MÉTHODES DE RECYCLAGE ET DE TRAITEMENT.

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SHARP CORPORATION
Digital Document System Group
Products Quality Assurance Department
Yamatokoriyama, Nara 639-1186, Japan
2003 November Printed in Italy